User Manual

Standalone DVR

Manual v1.4

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Notice before Using Product

Notice before Using Product

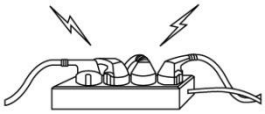
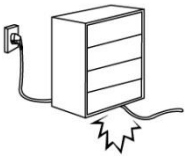
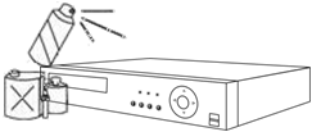
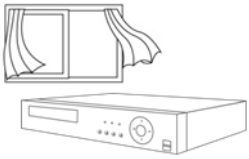
Please beware of the following precautions before installing the DVR.

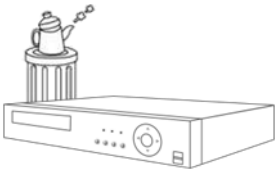
① Please avoid placing the system near moisture or dust
② Please avoid placing the system near direct sunlight or heat source
③ Please place the system on a solid surface without any vibrations and away from magnetic appliances
④ Please place the system in a room temperature environment (Recommended room temperature of 5℃ ~ 40℃)
⑤ Please make sure no foreign metallic/magnetic objects enter through the ventilation openings of the unit
⑥ Please place the system in a well ventilated area
⑦ Some Radio or TV signals may interfere with system, please place the system away at least 3 feet from home electronic appliances such as Radio/Stereo/Television/Projectors
⑧ Never place any heavy objects on top of the unit
⑨ Never disassemble the product, electronic shock may result in serious injury or death

Safety Warning & Precaution

Safety Warning & Precaution

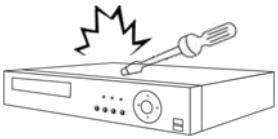
The following warnings and cautions are for your own safety and to prevent damage of the DVR system and/or other properties.

Warning (Review these warnings or you may be seriously injured or killed)	
 Turn off the system before installing the system. Do not plug in several electric devices to the same outlet. [This may cause heating, fire, or electric shock]	 Do not place any liquid container on the system, such as water, coffee, or beverage [If liquid is poured onto the system, it can cause system breakdown or cause fire]
 Prevent power cable from being severely bent or pressed by a heavy object.[This may cause fire]	 Clean the dust around the system on regular basis. When cleaning the system, always use dry cloth. [This may cause system breakdown or electric shock]
	Install the system in a place with sufficient air ventilation. [Keep at least 15cm distance between the back of the system and a wall]

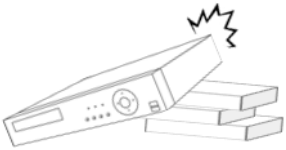


Avoid any place with moisture, dust, or soot.
[This can cause fire or electric shock]

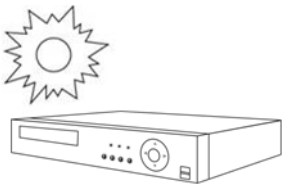
When pulling the power cable from the plug, do so gently. Do not touch the plug with wet hands and avoid using the plug if the holes on the outlet are too loose.
[This may cause fire or electric shock]



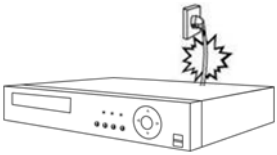
Do not attempt to disassemble, repair, or modify the system on your own. It is extremely dangerous due to high voltage running through the system.
[This may cause fire, electric shock, or serious injuries]



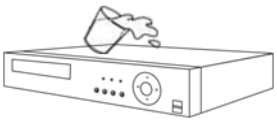
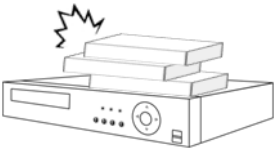
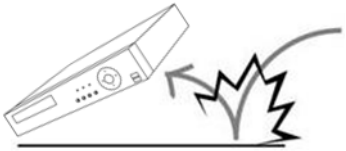
Install the system on a plain surface with sufficient air ventilation. Do not place the system on elevated surface.
[This may cause system break down or serious Injuries]



Install the system in a cool place without direct sunlight and always maintain room temperature.
[This may cause fire]



Avoid using aged old power cables or long extensions.
[This may cause fire]

⚠ Caution (Review these cautions or you may be seriously injured or cause property damage)	
 Do not install the system in a place with high magnetic, electric wave, or wireless devices such as radio or TV [Install the system in a place without magnetic objects, electric frequencies, or vibration]	 Install the system in a place with appropriate moisture and temperature level [Avoid installing the system with high (over 40℃) or low (under 5℃) temperature]
 Prevent any substances from being inserted into the system [This may cause system breakdown]	 Do not place any heavy object on the system [This may cause system breakdown]
 The system can be damaged from a strong impact or vibration [The system may not operate properly]	 If there is strange sound or smell, un plug the power cable immediately and contact the service center. [This may cause fire or electric shock]

Product Description

Product Description

Product Overview

"Standalone DVRs" are Standalone DVRs that support H/W compression, Realtime Display, and Full Channel Audio Input. Their stability was maximized by adopting Embedded Linux as the Operating System. By supporting strong Remote Surveillance and Remote Playback through network, they can be the optimized security solutions for IP Surveillance Generation.

Product Specification

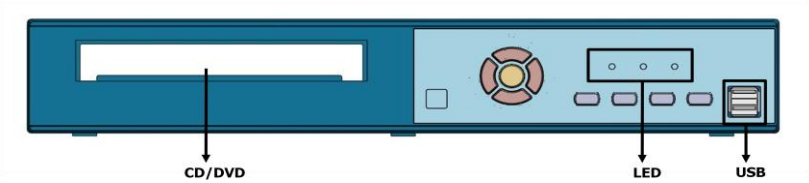
Specification		EP4120R	EP8240R	EP16480R
Video Input		4	8	16
CODEC	Video	H.264		
	Audio	ADPCM		
Video Output		[BNC] CVBS x 2, [BNC] SPOT x 1, VGA x 1		
Video Signal		NTSC/ PAL		
Operating System		Embedded Linux		
Pentaplex Function		Live Display, Recording, Playback, Backup & Remote access		
Interface Control		Unit's Frontal Buttons, Remote Controller, Mouse		
Audio In(RCA)		4	4	4
Audio Out		1 Port RCA, LINE Level (Functional Live Audio)		
Sensor Input (Type - NC/NO)		4	4	4
Alarm Output (Type - NC/NO)		1	1	1
Storage	ODD	CD-RW, DVD-RW(SATA) x 1ea (Optional)		
	MaxHDD	SATA x2ea (w/o ODD)	SATA x2ea (w/o ODD)	SATA x2ea (w/o ODD)
Video Recording (NTSC/PAL)	CIF	120/100	240/200	480/400
	2CIF	120/100	240/200	240/200
	D1	120/100	120/100	120/100
Motion Detection		Can be selected / 1 Channel has selection of 44x30 blocks with H/W based motion detection		
Recording Modes		Manual, Motion Detection, Schedule, Sensor		
Function		Watermark, Pre-recording, Dual Streaming, 2-way Audio		
Front LED		Record, Alarm, Network		

Backup Media	DVD-RW, USB Memory Stick
Firmware Upgrade	DVD-RW, USB Memory Stick, Network
Search Modes	Calendar, Event, Quick, Specific Time
Watch Dog	Hardware Watchdog Support
PTZ Connection	1 Prot Terminal Block, RS-485
PTZ Protocol	Pelco-D, Samsung SCC-641 and approx. 90 protocols support
Network	1 Port Ethernet 10/100 Base-T
Network Protocol	TCP/IP, HTTP, FTP, DHCP, PPPoE, DDNS, SMTP
DDNS	www.neodhs.com/ www.dyndns.com
DVR Recovery Mode	System Auto Restart, Network Auto Reconnect
CMS (Optional)	Max. 128CH CMS/ NDVR Support
Communication Port	RS232, RS485, Ethernet, 2USB(Mouse/ Backup)
Storage Temp.	20 ~ 60℃ / 20~95% RH
Operation Temp.	5 ~ 40℃ / 20~80% RH
Power	110-220V / 60-50Hz
Dimension	360mm(W) x 236mm(D) x 60mm(H)
Weight	2Kg (w/o storage)
Remote Software	StaNet™ (NetClient), WebClient Support
EMC Certificate	CE, FCC, KCC

Package Contents

	DVR System
	Adapter
	Remote Control Unit
	S/W Installation CD
	Power Cable (Option)
	User Manual (Option)
	Batteries (AAA) (Option)
	Mouse (Option)

Front Panel Layout



LED Status Lights

REC	LED on when recording
EVENT	LED on when events occur
NET	LED on when network is connected

USB Port

USB Storage can be connected for backup and F/W upgrade purposes.

CD/DVD-RW (Optional Type)

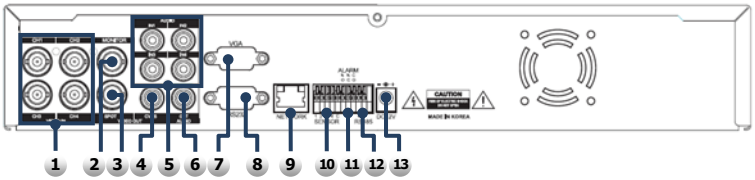
Blank DVD/CD (depending on the optical drive type) can be inserted to back up data or to upgrade the firmware.

Front Panel Buttons

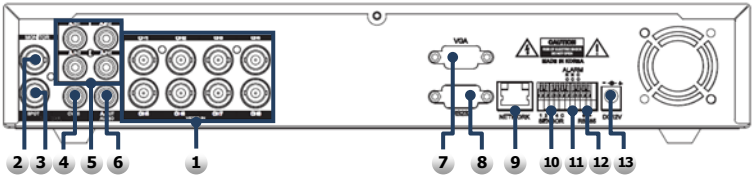
SEARCH	Launch the search function
MENU	Launch the system menu
REC	Start Recording
Back	Back from the current action
▲(Up)	Move up within split video channels or menu items
▼(Down)	Move down within split video channels or menu items
◀(Left)	Move left within split video channels or menu items
▶(Right)	Move right within split video channels or menu items
Enter	Select a channel or a menu item

Rear Panel

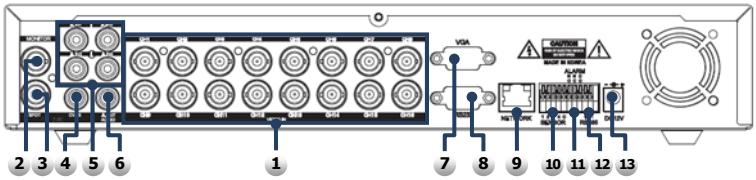
4CH



8CH



16CH



①	**Video In**	[BNC]Camera Input
②	**CVBS Out**	[BNC]Main Composite Video Out
③	**SPOT Out**	[BNC]SPOT Out
④	**CVBS Out**	[RCA]Main Composite Video Out
⑤	**Audio In**	[RCA]LINE(MIC) Audio In
⑥	**Audio Out**	[RCA]Audio Out
⑦	**VGA Out**	VGA Output
⑧	**RS-232**	RS-232 Serial COM Port
⑨	**Network Port**	[RJ-45]Ethernet Port
⑩	**Sensor In**	Sensor Connection (Non Powered Type)
⑪	**Alarm Out**	Alarm Connection (Non Powered Type)
⑫	**RS-485**	RS485 for PTZ Control
⑬	**Power In**	Adapter Power (DC12V)

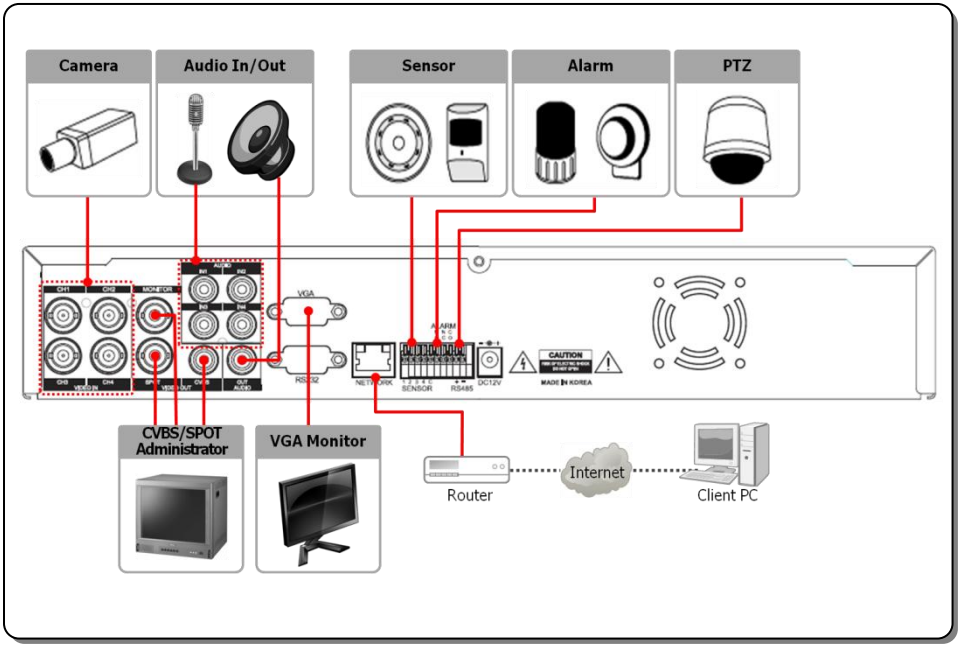
Remote Control Unit Layout

POWER	Power ON/OFF
FREEZE	Pauses live view screen for quick scan/review of event
REC	Start Recording
MENU	Launches the menu
BACK	Back from the current action
	Navigate through menus. Select the item.
SEARCH	Launches the search
STOP	Stop playback
PTZ	Launches the PTZ setup
REW	Rewind playback
PLAY/PAUSE	Play/Pause playback
FF	Fast forward playback

Product installation

Product installation

Connection Outline (4CH case)



Video Connection

A. Input

This series of DVR systems have a total of 16 camera inputs for recording. Either NTSC or PAL video signal cameras maybe used in this system and will be set in the system configuration menu. Please do not mix different video signal types into 16 channels. All 16 must either be NTSC or PAL. (※ Max Video Input number varies by each products.)

Output

① **CVBS:** Composite video signal will be sent through the BNC port for video output. Standard CCTV monitor may be used for video output connection.

② **VGA:** Composite video signal will be sent through the VGA port for video output. Standard 15 PIN VGA monitor maybe used for video output connection.

③ **SPOT:** All cameras will be sent full screen to the port with sequence mode. Uses BNC video connection.

Audio Connection

A. Input

① LINE (MIC) Input: This DVR supports up to 4 audio inputs. Please refer to the back panel of the DVR for input locations.

② Default audio input signal level is Line-In. An additional device should be installed to use MIC-In level of audio input,

Output

This DVR has 1 output for audio out. Either TV's internal audio input can be connected directly to DVR's audio output or an externally powered speaker can be connected to the audio output for sound.

Alarm/Sensor/PTZ Connection

A. Alarm

This product does not supply power to an alarm internally. The alarm type that should be used is Dry Contact Type. Up to 1 alarms can be connected.

① Use two wires for connection.

② Depending on type of Alarm used, please choose the right type from DVR's Alarm Menu.

Info	NO	Normal Open
	NC	Normal Close

Sensor

This product only supports sensors that act as simple mechanical switches (dry-contact type sensors.) Up to 4 sensors can be connected.

① Of the two wires from the sensor equipment, connect one of the wires to the C (Common) terminal in the terminal block. Then connect the other wire to the terminal of the corresponding channel (1~4).

② Access the DVR Menu and setup each sensor to either NO / NC.

PTZ

① Using RS485 Connection, PTZ cameras should be connected using D+ and D- port in the rear of the system. PTZ control signal can be daisy chained for multiple PTZ devices.

② Before using the PTZ, an appropriate PTZ protocol must be selected in the PTZ menu.

Network Connection

DVR has an Ethernet port in the rear for standard RJ45 cable connection.

Hard Disk Drive

DVR System supports only SATA (Serial ATA) connection. Hard drives must be SATA and up to 2 hard drives may be connected.

① Turn off the power after system shutdown
② Open the top casing cover.
③ Please make sure the hard drive is properly seated in the hard drive rail
④ Install SATA cable/power cable properly to the hard drive. Please double check the connections.
⑤ Close the top casing cover.

⚠ **Attention!**
At least one HDD must be installed for DVR's normal operation.

Power Connection

DVR system requires a 110-220V/ 50~60Hz power input. Please be sure to connect right power to the rear power port.

System Installation Complete

You have successfully installed the DVR system.

Operation Description

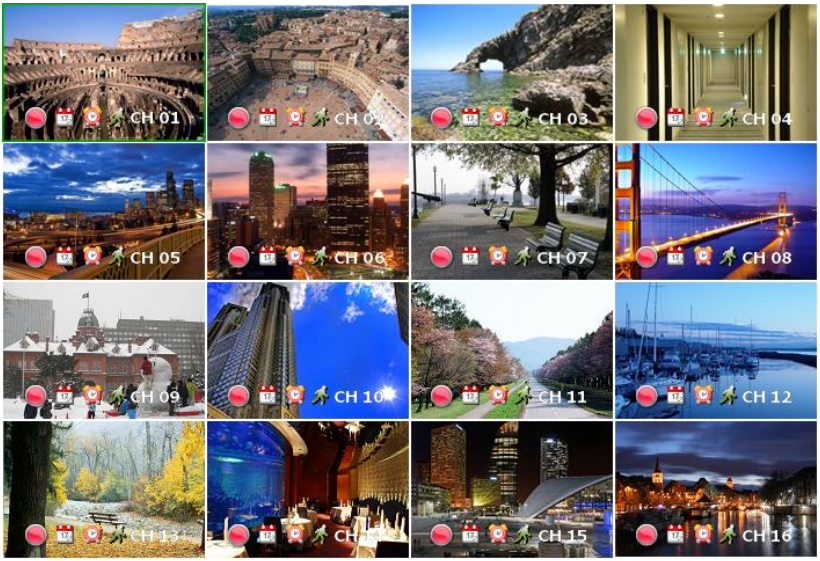
Operation Description

1. Starting the System

Please make sure the power cord in the rear is firmly connected.
Press the power button in front of unit for initial start. At initial power-up, the system will start automatically when the power cord is connected. Main screen should come up with connected video screens.

2. Surveillance Mode

Initial Screen



[Screen 2-1] Surveillance Screen (16CH case)
(Surveillance screen may differ from model to model)

Video Screen

[Screen 2-1] A single screen will appear upon start up, which will include all the video input into one single video output.

[Screen 2-2] Each camera channel will show a status caption above the actual video image. This makes viewing of each camera status very easily accessible.

[Screen 2-2] Status Panel

Status icon is explained in the following:

① Recording is in progress
② Scheduled recording mode is active
③ Sensor input has been triggered
④ Motion detection has been triggered
⑤ CH-01: Channel name / Camera name

Each channel is selectable from the split screen view for more detailed picture and controls.

① Watching a single channel with full screen mode.
② Controlling PTZ
③ Enlarging surveillance video with the digital zooming function

Control Panel

At the bottom of main screen, a convenient DVR control panel is located. The DVR buttons and control is grouped into 3 types of controls, depending on the current mode, the grouping will come in handy.

The following is quick overview. The control panel provides 3 functions by each categories.

Locations	Description
Left	Split screen modes
Center	A collection of general functions on DVR
Right	Main features shortcut menu buttons

Basic

<Split screen mode> <Current time> <DVR function shortcut>

As shown above, the default control panel features split screen buttons, displays the current time, and DVR function shortcuts.

HDD Usage Display

<Used HDD >

Click on "➔" button to show the HDD usage display panel on the center panel. The panel provides the overall storage consumption status of the HDDs installed in the system.

PTZ Control

<PTZ Command>

Click on "➔" button to change the center side of panel to the PTZ control panel. This control panel provides PTZ control function to a video channel at which PTZ configuration is set.

Playback Control

<Playback date and time > <Playback Command>

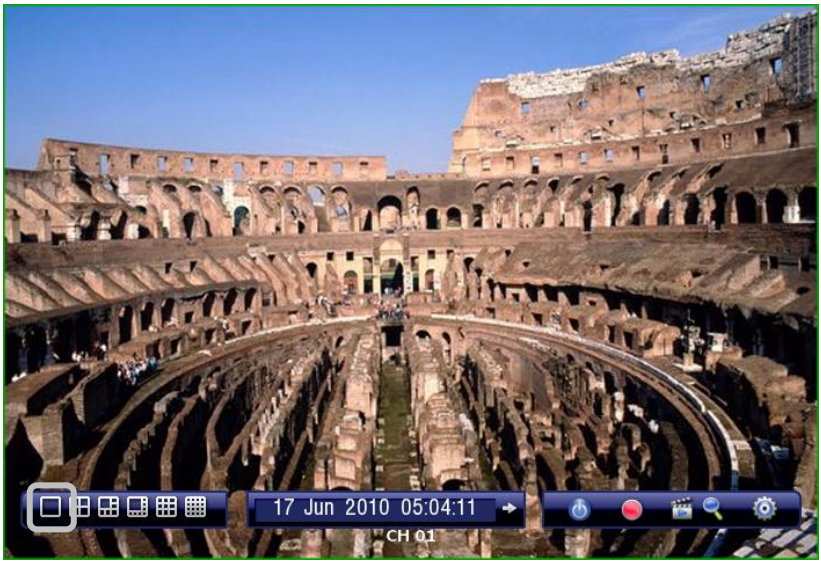
When in playback mode, the screen will indicate new tools at the bottom right side the panel.

The control panel provides playback controlling functions for speed and direction of all channels.

※ Refer to the next page for the detailed explanation of the control panel.

Split Screen Modes

Full Screen View



[Screen 2-3] Full Screen View

View a channel in full screen, by double clicking on a channel [Screen 2-3]. Alternatively, click on button to full-size a selected channel.

Double clicking on the screen while in full screen mode will turn back to previous split screen mode

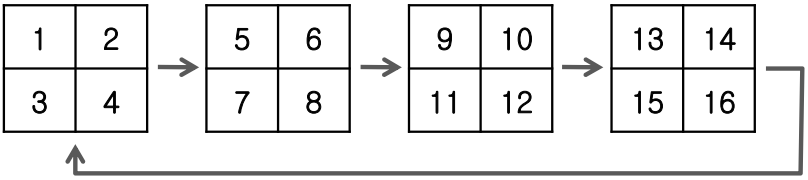
Clicking button once more will switch to the next available channel.

4 Split Screen View

[Screen 2-4] 4 Split Screen View

To view the DVR in 4 channel division, click button. [Screen 2-4]

In addition, by clicking button once more, the next 4 set of channels will be shown and so on.

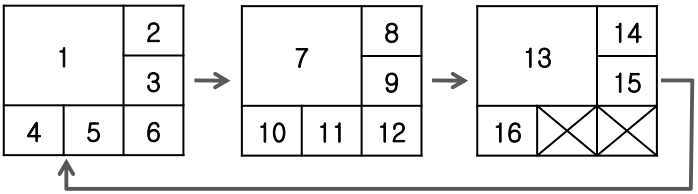


6 Split Screen View

[Screen 2-5] 6 Split Screen View

To view the DVR in 6 channel division, click button. [Screen 2-5]

In addition, by clicking button once more, the next 6 set of channels will be shown and so on.



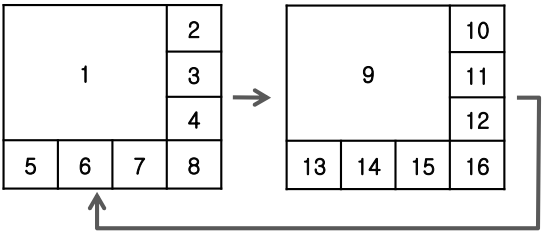
In the above diagram, the 'X' indicates channels which will not be shown.

8 Split Screen View

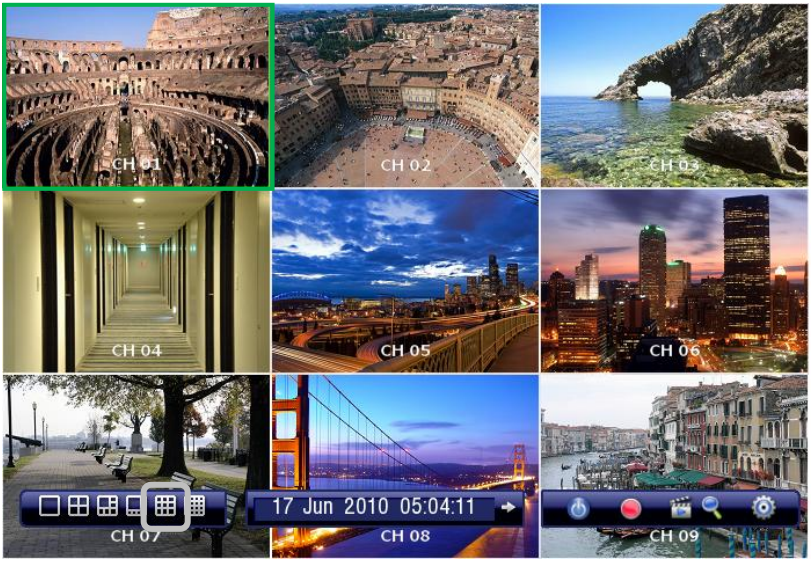
[Screen 2-6] 8 Split Screen View

To view the DVR in 8 channel division, click button. [Screen 2-6]

In addition, by clicking button once more, the next 8 set of channels will be shown and so on.



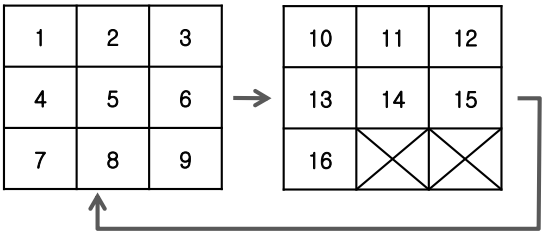
9 Split Screen View



[Screen 2-7] 9 Split Screen View

To view the DVR in 9 channel division, click button. [Screen 2-7]

In addition, by clicking on button once more, the next 9 set of channels will be shown and so on.



In the above diagram, the 'X' indicates channels which will not be shown.

16 Split Screen View

[Screen 2-8] 16 Split Screen View

To view the DVR in 16 channel division, click button. [Screen 2-8]

3. Playback Mode

DVR is able to playback any recorded data with many different function modes of playback. In this section, each playback mode and search function is documented for usage.

[Screen 3- 1] Playback Screen

Initial playback screen will show [Screen 3-1] with status bars at the bottom of the screen. Each bar and function is detailed as follows:

Split Screen Modes

Left bottom side of the status bar will have screen split controls

Playback Date and Time

It shows the current date and time of the video that is being played back. The speed of playback time will vary depending on the speed of playback.

Playback Controls

Controls for playback are located at the bottom right of the status bar. Fast forwarding and fast rewind is up to 64 times the normal playback.

① : Reverse Playback. Press repeatedly to speed up backwards.

② : Stop

③ : Pause

④ : Play

⑤ : Fast Forward. Press repeatedly to speed up.

4. Search Mode

[Screen 4- 1] Shortcut to the search

During surveillance mode, the buttons on the bottom right will enable 4 types of search mode.

[Search]

① Quick Search. This button plays playback the latest recorded video 1 minute before.

② Click to enter the Search. Then click to run Calendar Search

③ Click to enter the Search. Then click to run Event Search

④ Click to enter the Search. Then click to run Specific Time Search

Quick Search Mode

Clicking button will activate quick playback of latest video that was recorded.

※ Please go back to “Playback Mode” page for reference on how to use the playback mode

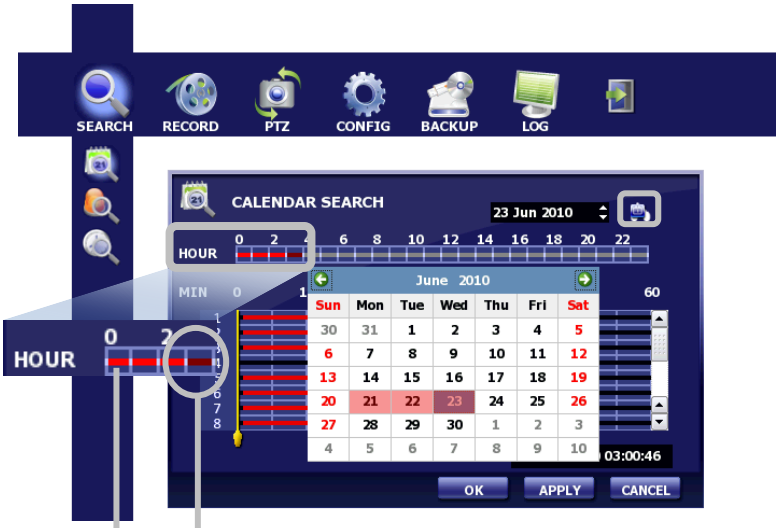
Search

While in the main screen, click on button to enter the search menu. [Screen 4-2]

[Screen 4- 2] Search

Calendar Search

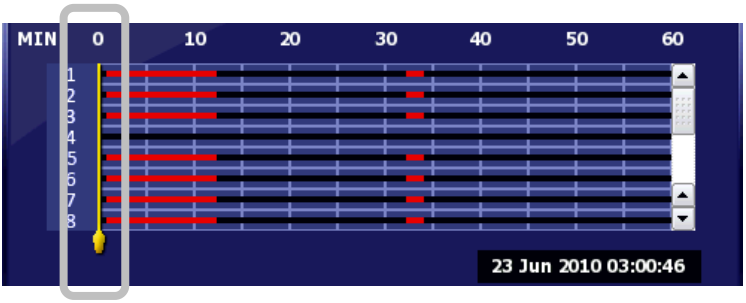
[Screen 4-2] On the left side of the search menu, click on button to start calendar search. [Screen 4-3]



[Screen 4- 3] Calendar Search

[Screen 4-3] On the top right side of search screen, click on button to start calendar search.
A calendar will open. Dates with available data will be marked in red rectangles [Screen 4-3]. Click on a date.

Time bar indicator will open. Hours with available data will be indicated by red bars. Click on the time bar to select an hour.



[Screen 4- 4] Time bar Indicator (Minute)

In the time bar indicator for minutes, minutes with available data will be indicated by colored bars. Select a minute, and click OK button to start playback. [Screen 4-4]

※ Please go back to “Playback Mode” page for reference on how to use the playback mode

Using the Calendar Search (How To)

① Click button to open the search calendar.

② Select a date with searchable data.

③ HOUR indicates from 0 hour to 23 hour. Searchable data will be indicated in red.

④ MIN indicates from 0 minute to 59 minutes. Searchable data will be indicated in red.

⑤ Select the hour and minute, and click OK button to start play back.

※ Please go back to “Playback Mode” page for reference on how to use the playback mode.

Calendar Search – DST(Daylight Saving Time)

[Screen 4- 5] DST(Daylight Saving Time)

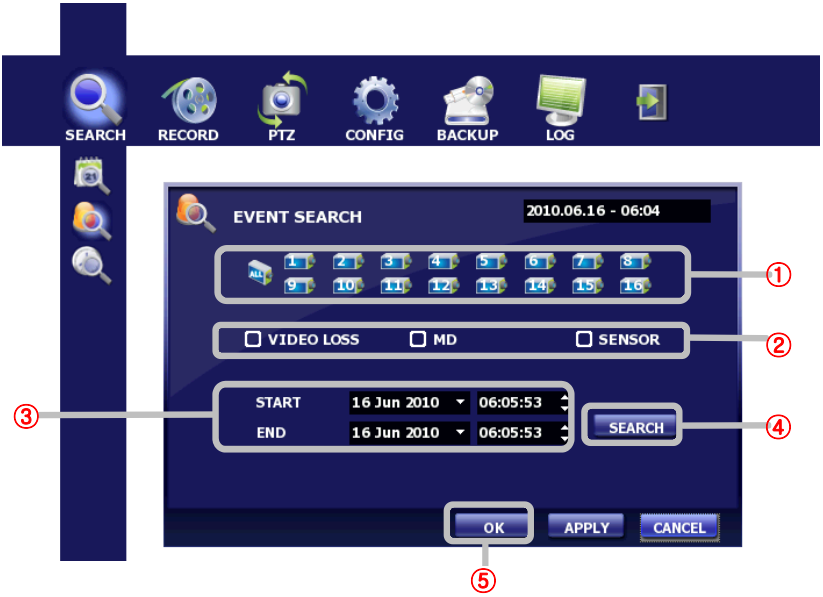
① DST(Daylight Saving Time)
- In countries that use daylight savings time, the last day of daylight savings time will be recorded as a 25 hour day.
- On the last day of daylight savings time, the recorded data at the end of the day – which contains the extra 1 hour of data - will be marked in blue
- The data marked in blue – which contains 2 hours of data - can be searched by either choosing 1 hour right before, or 1 hour right after daylight savings time ends.
- Click on the blue time. A dialog box for selecting the search time will open.

② DST Popup
- Click on the blue time. A dialog box for selecting the search time will open.
- Use the dialog box to search the hour right before and after the end of daylight savings time

③ DST time configuration will be applied automatically when selecting specified time zone.

Event Search

On the left side of search screen [Screen 4-2], click on button to start the event search. Event search [Screen 4-6] will be shown.



[Screen 4- 6] Event Search

A database of all the events occurred is kept along with the date and time. Easily search for video footage from specific events.

Using the Event Search (How To)

① Select the channel to search.

② Select type of event: VIDEO LOSS, MOTION DETECT, and SENSOR.

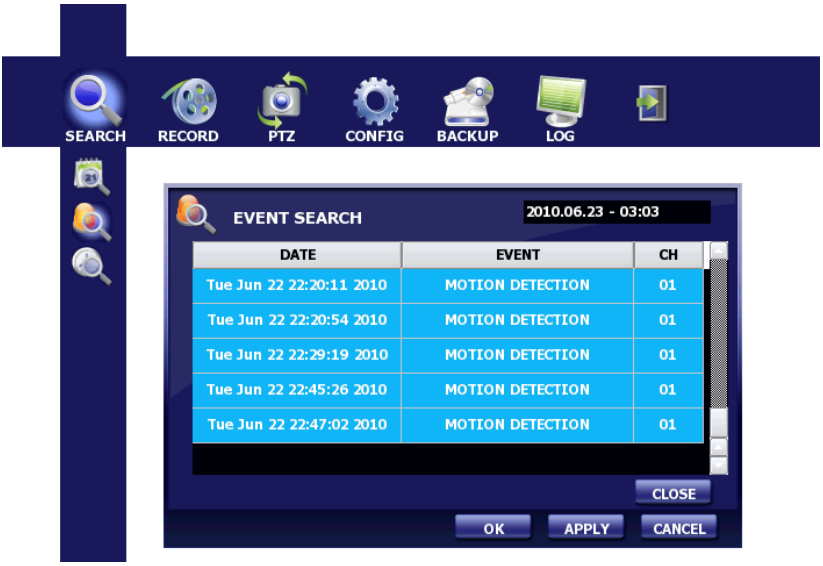
③ Select Start and End Date/Time for which days/hours to search.

④ Click SEARCH button to start searching for events.
Search results will be shown in [Screen 4-7]

⑤ Choose an event from the result and click OK button, the display mode will be changed to playback mode, and

then playback will be started from the time that the selected event was stamped .

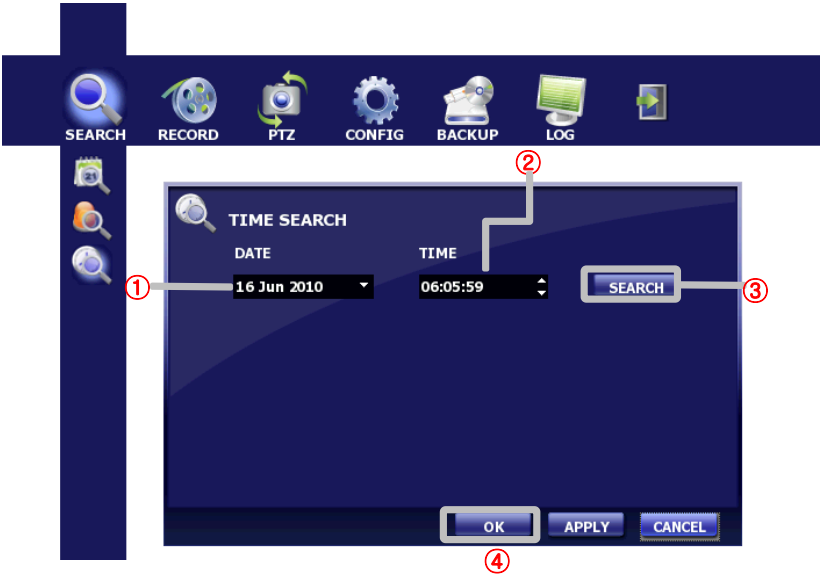
※ Please go back to “Playback Mode” page for reference on how to use the playback mode



[Screen 4- 7] Event Search Results

Specific Time Search

[Screen 4-2] On the left side of search screen, click on button to start the time search. Time search [Screen 4-8] will be shown.



[Screen 4- 8] Time Search

Use time search to jump right to a specific time to watch recorded video.

Using Time Search (How To)

① Input the date into DATE field

② Input the time into TIME field: Hour, Minute, Second

③ Click SEARCH or OK button, the display mode will be changed to playback mode and it will start playing from the selected time .

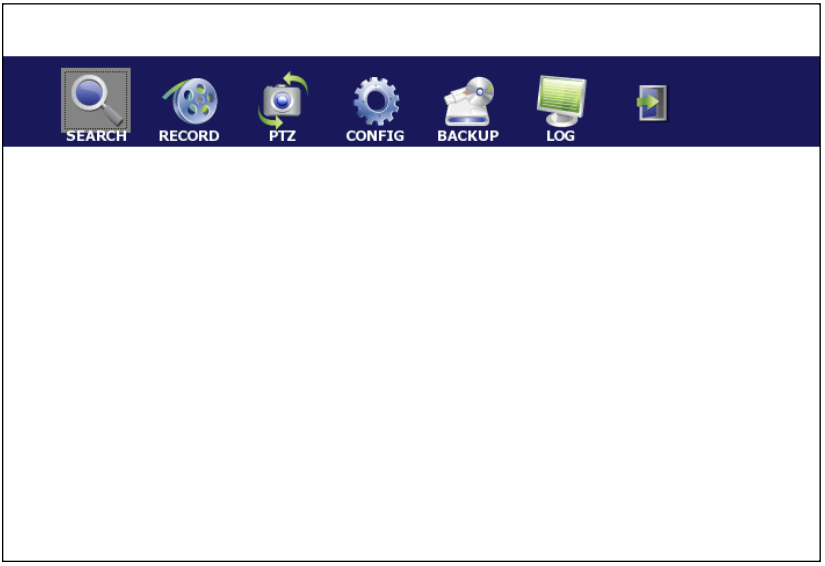
※ Please go back to “Playback Mode” page for reference on how to use the playback mode

5. Menu Mode

[Screen 5- 1] Menu Mode

On the surveillance screen click the (Setup) button to access the menu mode.

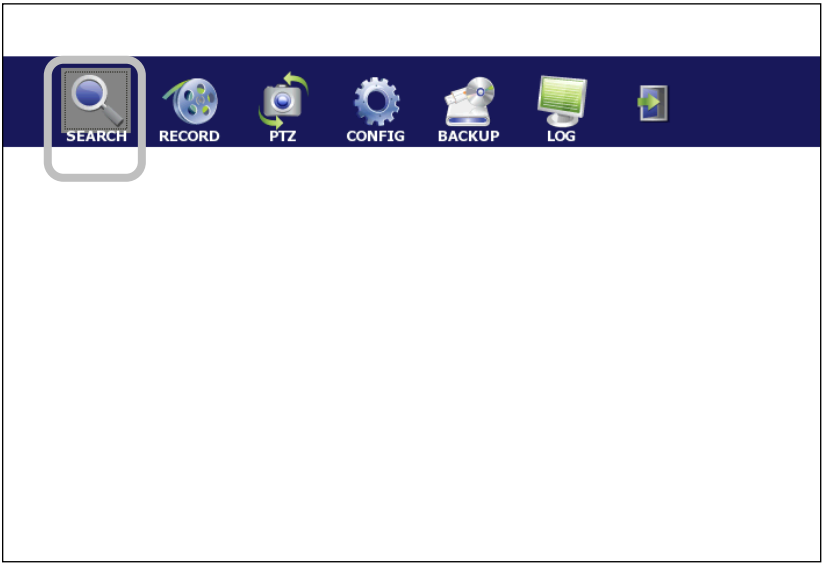
Initial Menu



[Screen 5- 2] Initial Menu

Initial Menu screen will open when button is clicked

Search Menu



Indicated above is the search mode button in the main menu..
Please refer to “Search Mode”.

Recording Configuration

User can set the DVR to record video with specified perimeters. The DVR will start recording in the following cases:

① When user presses the button in the system front panel for manual emergency recording

② When user clicks on button from the control panel in the surveillance screen for manual emergency recording.

③ If schedule is set up to record at certain times of the day.

④ When motion detection mode is enabled. Recording will start when any change is detected in channel pixel frames

⑤ When a sensor is triggered

⑥ When a 'Video Loss' is triggered (The other channels will start recording)

In Recording Setup 'Record Config' of the main menu, a series of configuration screens is provided. The user can use this menu to configure the DVR to start recording in different types of situations.

Record Configuration

[Screen 5- 3] Record Configuration

Configure the recording options as follows:

① OVERWRITE: Enable overwrite to allow new data to be overwritten over the oldest data when storage space is full..

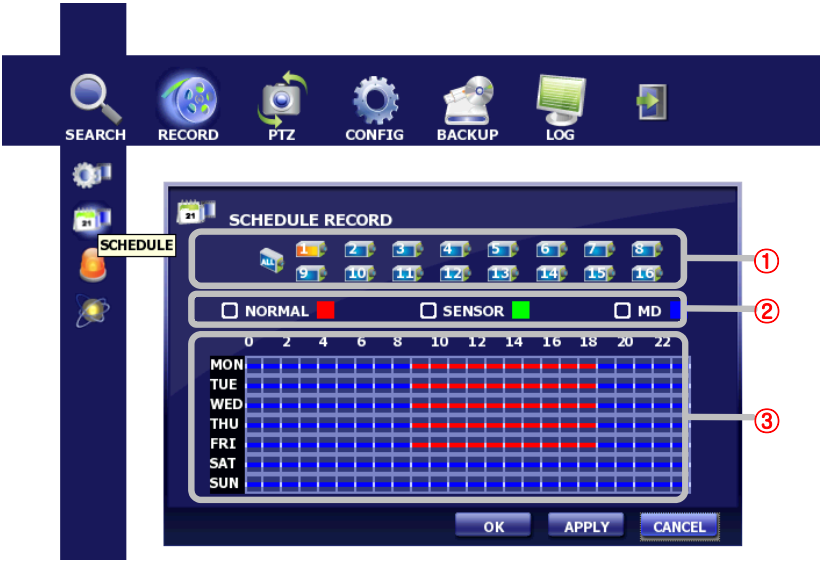
② ENABLE LIVE AUDIO: Enable to output recording audio.

③ Recording Quality configuration table is as follows,

ALL	When selected, same settings will be applied to all channels
CH	Channel specific setting
ON	Select to turn on/off recording of a channel
VBR	Recording size varies by motion with this setting. More motion takes more disk space to record.
SIZE	Adjust video resolution
QUALITY	Adjust video quality

AUDIO	Select ON to record audio
FRAME	Adjust frame rate (fps) for smoother playback
PRE	Set Pre-recording Duration (Unit Seconds)
POST	Set Post-recording Duration (Unit Seconds)

Record Schedule Configuration

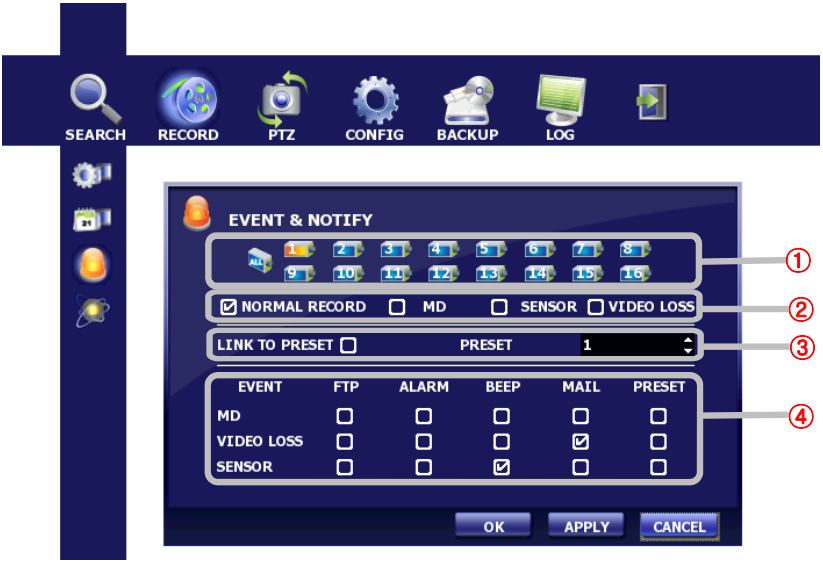


[Screen 5- 4] Record Schedule Configuration

Configure recording schedule

① Select a channel to schedule
② Select type of event to schedule
③ Click and drag using mouse cursor to select the specific time schedule. Schedule may be selected hour by hour.

Event & Alarm Configuration

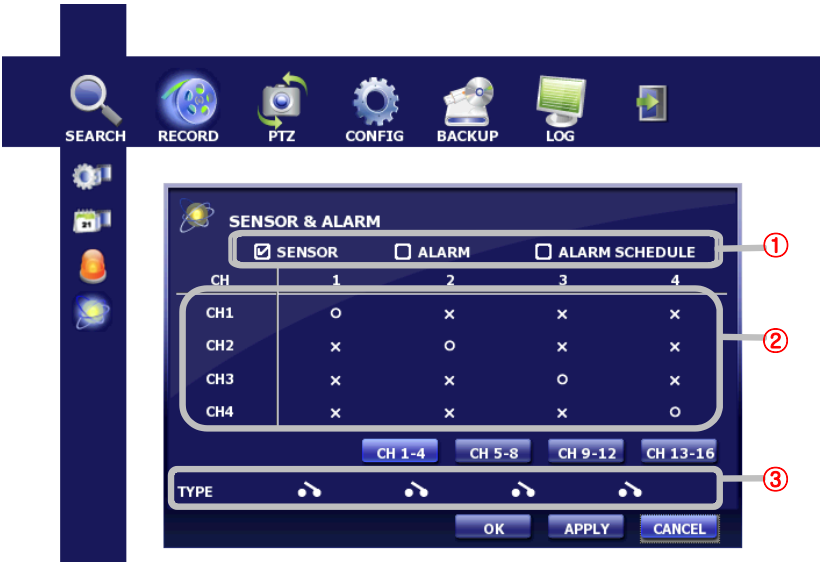


[Screen 5- 5] Event & Alarm Configuration

Select which events will trigger which type of notification in this configuration screen.

① Select a channel to configure.
② Select which of the event triggers would activate an event.
③ Configure preset settings for each event.
④ Select the response (type of notification) of DVR system to the events selected in ②.

Sensor In & Alarm Out Configuration



[Screen 5- 6] Alarm In & Alarm Out Configuration

Configure SENSOR In or ALARM Out box to configure settings for SENSOR In or ALARM Out. In the above picture, each rows mean Video channels and each columns mean the channel of Sensor or Alarm. It's available to configure multiple Sensors or Alarms to a Video channel and to configure multiple Video channels to a Sensor or Alarm channel.

① Select one item to configure Sensor or Alarm

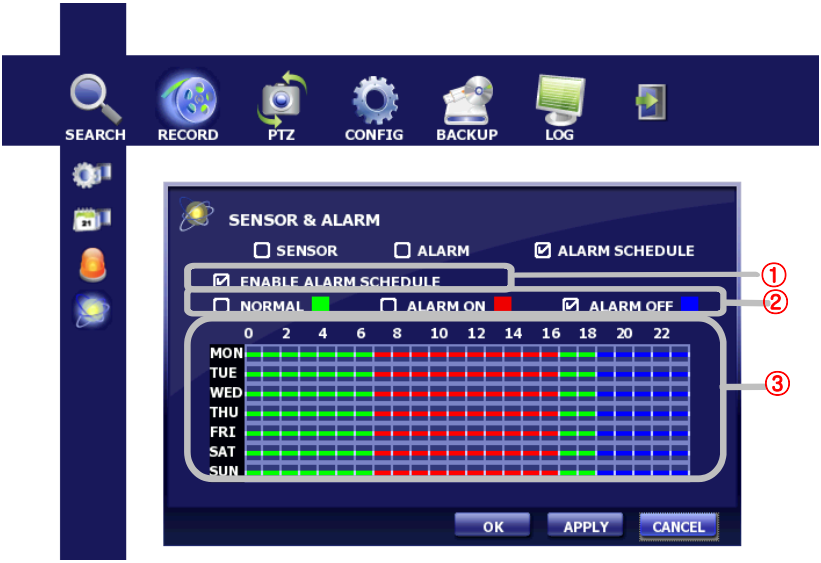
② In the O/X table, configure which Sensor device or Alarm device to connect to which video channel.
'O' means Sensor of Alarm is assigned to a video channel,
'X' means Sensor of Alarm is NOT assigned to any video channel.

③ Set up sensor (alarm in) type and alarm (alarm out) type on the bottom.

※ NC: Normal Close

NO: Normal Open

Alarm Schedule Configuration



[Screen 5- 7] Alarm Schedule Configuration

Configure alarm schedule.

① Enables alarm schedule configuration.

② Select a schedule option.

"NORMAL', the alarm is schedule to normal action.
'ALARM ON', the alarm is schedule to always active.
'ALARM OFF', the alarm is schedule to always inactive.

③ Click and drag using mouse cursor to select the specific time schedule. Schedule may be selected hour by hour.

PTZ Configuration

[Screen 5- 8] PTZ Configuration

Configure PTZ protocol

① Select channel to setup PTZ

② To activate a PTZ, please click PTZ ENABLE

③ Select the appropriate PTZ PROTOCOL.

④ Select the right PTZ Address ID (1-255)

⑤ Move PTZ camera direction to a position.

⑥ Save PTZ preset number by pressing the “SAVE” button after setting the “PRESET” number.

⑦ Click “Apply” or “OK” to save changes.

System Configuration

OSD (On Screen Display) Configuration

[Screen 5- 9] OSD Configuration

Configure OSD of the live surveillance video channels.
The following table is a detailed explanation of OSD setting.

ITEM	DESCRIPTION
DATE TIME	Center date/time status bar ON/OFF
HDD GAUGE	Center HDD status bar ON/OFF
MD PREVIEW	Motion preview box grid ON/OFF
SHOW MD	MD status icon ON/OFF
SHOW SENSOR	SENSOR status icon ON/OFF
SHOW VIDEO LOSS	VIDEO LOSS status icon ON/OFF
ENABLE DIGITAL ZOOM	Enable/Disable Digital Zoom for cameras even do not support zooming function (Refer to the next page)
ENABLE AUTO HIDE FLOATINGBAR	Enable/Disable auto-hide function for the Floating bar on the live display mode
SPOT,LIVE SEQUENCE	Spot/ live sequence dwell time
LANGUAGE	Language setup
@-BLENDING	Transparency configuration

Digital Zoom

[Screen 5- 10] Enabling Digital Zoom

In the screen, It enables Digital Zoom function by checking the Enable Digital Zoom check box. Digital Zoom function is for enlarging the Video Image for cameras even do not support zooming function. As the above screen, Digital Zoom icon will be displayed when moving the mouse pointer over the selected channel. Mouse clicking the icon, Digital Zoom will be activated as the screen of the following page.

[Screen 5- 11] Digital Zoom mode

The video image moves when mouse clicking to a point to move on the screen with Digital Zoom mode as the above screen.
Click the Digital Zoom icon to quit Digital Zoom mode.

Camera Configuration

[Screen 5- 12] Camera Configuration

Adjust color settings for each channel, and other channel/camera-related setting

① Select a channel to configure (Indicated with Yellow)

② Configure HUE, SATURATION, BRIGHTNESS, CONTRAST for video channels.

③ Recall the factory default configuration.

④ Configure channel caption

⑤ COVERT / CAMERA OFF:

- COVERT: The channel will be hidden in the live screen, but if the channel is configured to record in the record settings, the channel will be recorded.
- CAMERA OFF: The channel will be hidden in the live screen, and even if the channel is configured to record in the record settings, the channel *will not* be recorded.

⑥ Camera Type: Select camera video signal by regions.

⑦ Configure motion detection area with mouse dragging or arrow buttons & OK button of the remote control unit(RCU).

⑧ Clicking “CLEAR” button unsets the entire area of motion detection area. Clicking “ALL” button sets the entire video area to motion detection area.

⑨ Configure motion detection sensitivity.

Storage Configuration

[Screen 5- 13] Storage Configuration

Recording space can be chosen and status of each hard drive can be checked in this menu

① Select a storage to format
② Display storage usage status
③ Format the selected storage by ①

Network Configuration

[Screen 5- 14] Network Configuration

Configure network connection

① Network settings allow Static IP, Dynamic IP, PPPoE
② The form to input setting values for Static IP
③ The form to input setting values for PPPoE.
④ DDNS is supported by NeoDHS and DynDNS
⑤ The form to input setting values for DDNS by ④.

Streaming Configuration

[Screen 5- 15] Streaming Configuration

Configure streaming environment.

① Specify network port number for remote client connection.

※ The default value of Remote Watch Port Number : 20408

② Enable / Disable Two Way Audio

※ Function of Two Way Audio

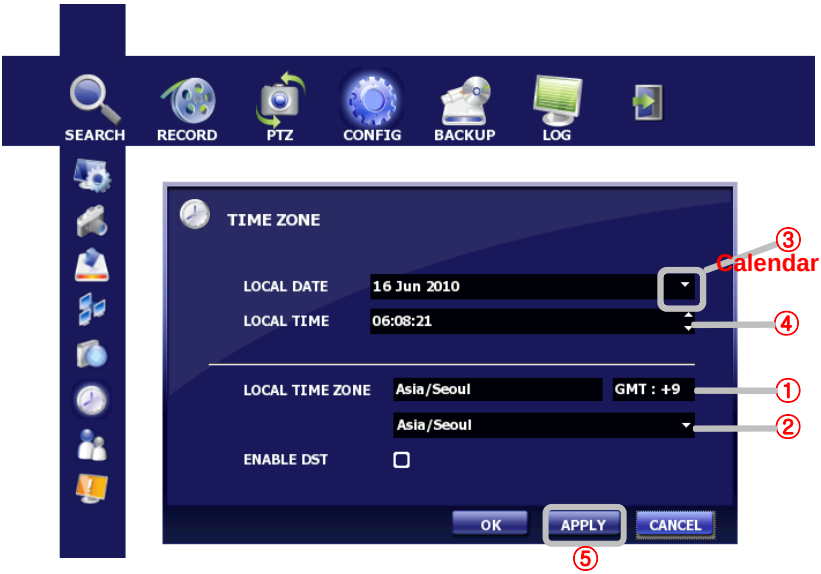
- This function enables audio can out with a standalone set from NetClient.
- It supports half duplexing only.

③ Video Resolution, quality, audio, and frame rate.

ALL	Apply the same settings to all channels
CH	Channel specific setting
ON	Select to turn on/off recording of a channel
VBR	Network bandwidth for streaming video varies by motion with this setting. More motion takes more network bandwidth.

RESOLUTION	Adjust video resolution
QUALITY	Adjust video quality
AUDIO	Select ON to record audio
FRAME	Adjust frame rate (fps) for the streaming speed of the selected channel

Date & Time Configuration



[Screen 5- 16] Date & Time Configuration

Configure system date & time setup

① Displays current time zone

② Change current time zone. Click to display all available time zones

③ Change current date. Click on section to open calendar [Screen 5-16]
Select the day, month, year, hour, minute, second with the mouse.

④ Select hour, minute, or second with mouse clicking and set the time by clicking the up/down arrows or by turning the mouse wheel up or down.

⑤ Click “APPLY” or “OK” to save setting.

※ Changing time zone changes the current GMT time automatically.

[Screen 5- 17] Date Setup

① Move from month to month by clicking ←, →

② Select a date by clicking on a day in the calendar.

③ Click “Apply” or “OK” to save changes. .

User Management Configuration

[Screen 5- 18] User Management

Configure user management

① Select user level to configure [ADMIN, MANAGE, USER1~4]
※ Warning: The factory default setting value for the password of the “ADMIN” account is empty.
② Edit user email address
③ Password: Settings will be applied only if the correct password is entered in “Current Password.”
④ If this box is checked, enable the user email address edit box.(②)
⑤ A pop up window for configuring e-mail server information will open..
⑥ Login Enable/Disable: If this box is checked, the login window will not pop up when opening the menu.
⑦ Login Timeout: After the most recent login, the login window will not pop up for certain time duration.
The time is in seconds, and the default value is 60 seconds.
⑧ Click “APPLY” or “OK” to save settings

[Screen 5- 19] User Management

Click SETUP button in the above screen to configure e-mail server information.

① SETUP: Click to open a pop up window for configuring e-mail server information.
② Input e-mail server address
③ Input e-mail server port number.
④ If this box is checked, login necessary at the time of set of the e-mail server
⑤ Input e-mail user ID
⑥ Input e-mail password.
⑦ Click OK to save settings.
⑧ Click to test the e-mail notification function.

System Information

[Screen 5- 20] System Information

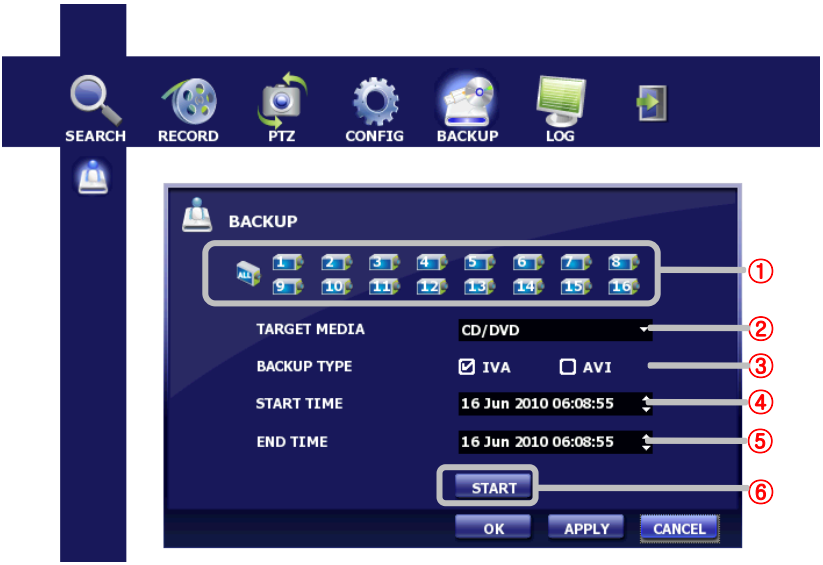
DVR system information
In system information menu, a number of system information is displayed, and user can also upgrade the DVR firmware.

① Upgrade
- Select the storage medium which contains the upgrade firmware
- Press the upgrade button to start upgrading the firmware
- If the storage medium contains a multi-national language pack or the web client pack, they will be upgraded altogether.

② Default: Reset all settings to default

③ Click “UPGRADE” to start upgrade.
The system will reboot automatically when upgrade is finished.

Backup

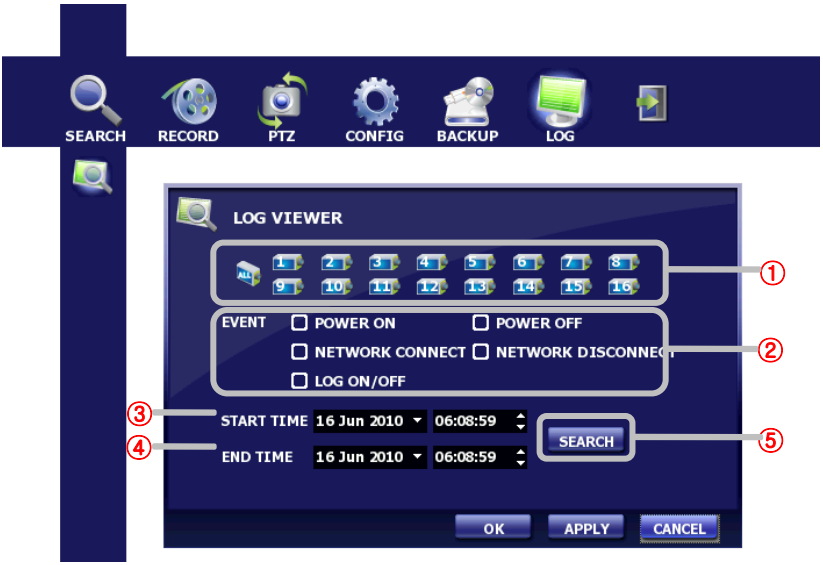


[Screen 5- 21] Backup

DVR data backup instructions

① Select the backup channel
② Select backup medium (CD-ROM, USB Storage)
③ Select the type of backup data.
④ Start of backup date, time
(Remember to review and write down which data to backup from search mode)
⑤ End of backup date, time
⑥ Click on START to start backup process

Log Viewer



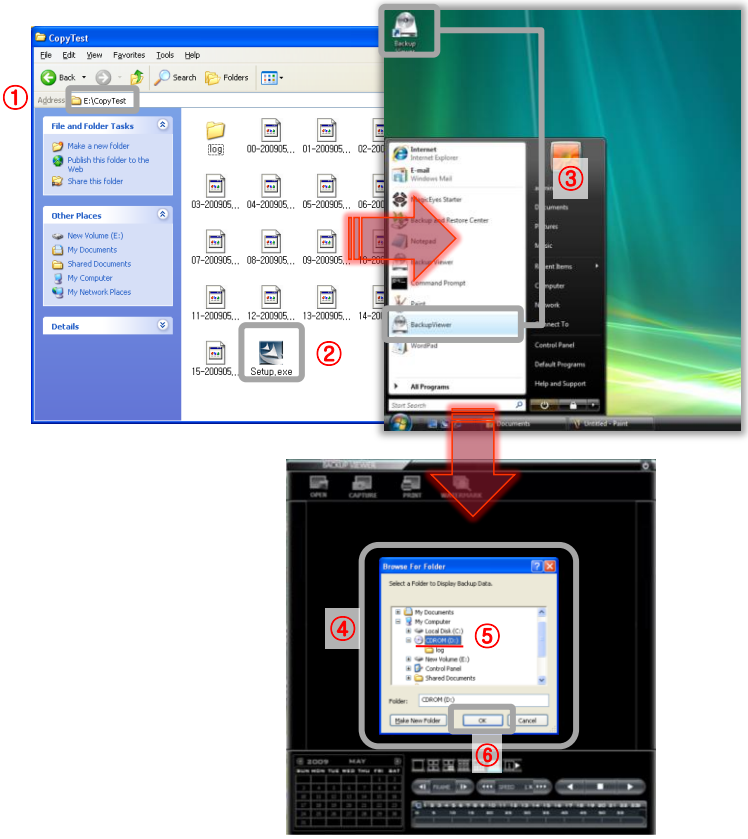
[Screen 5- 22] Log Viewer

Search system logs

① Select the channel
② Select the event
③ Start date, time
④ End date, time
⑤ Click “SEARCH”
Results will be displayed in the following screen.

[Screen 5- 23] Log View Searched Results

6. Backup Viewer



[Screen 6- 1] Open dialog

[Backup Viewer Scenario]

① After backup is finished, insert the backup medium to a PC. The backup files can be found by opening the drive path for the backup medium in Windows Explorer. A setup file for installing Backup Viewer for viewing the backup files will be created in the same path.

② Double-click ‘Setup.exe’ to install Backup Viewer.

③ When installation is finished, Backup Viewer icon will be

created on the desktop or in start menu. Double-click the icon to run Backup Viewer.

④ When Backup Viewer opens, ‘OPEN’ dialog box will pop up automatically. The ‘OPEN’ dialog box is used to search for the directory with the backup files.

⑤ Select the directory where the backup files are stored.

⑥ Click ‘OK’ button.

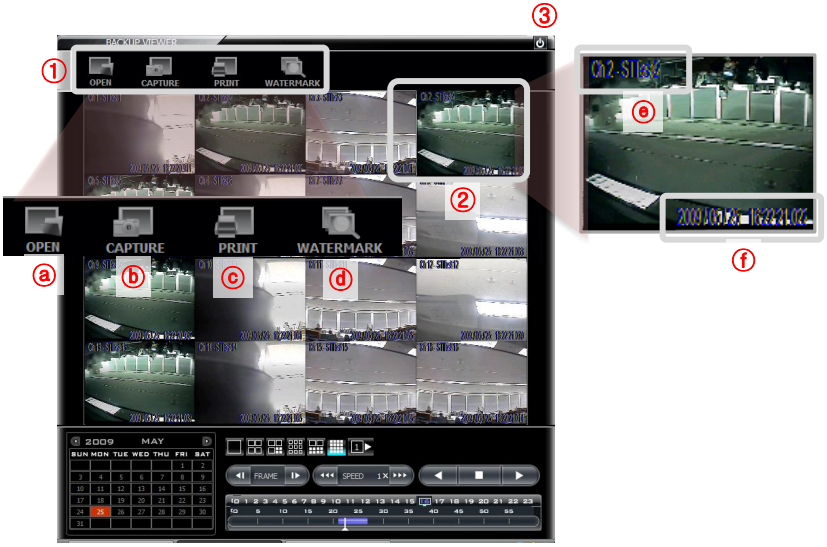
Backup Software Outline

Backup Viewer Window

[Screen 6- 2] Backup viewer

① Main Menu Area
② Display Area
③ Calendar Panel
④ Display and Playback Control Panel

Main Menu and Display Area



[Screen 6- 3] Main Menu & Display

① Menu Area

ⓐ Open: Select the directory where the IVA backup files are stored.

ⓑ Capture: Save the current screen of the selected channel as an image file. (BMP or JPEG)

ⓒ Print: Print the current screen of the selected channel.

ⓓ Watermark: Open an image file that was saved with watermark function enabled, and check to see if the image has been modified.

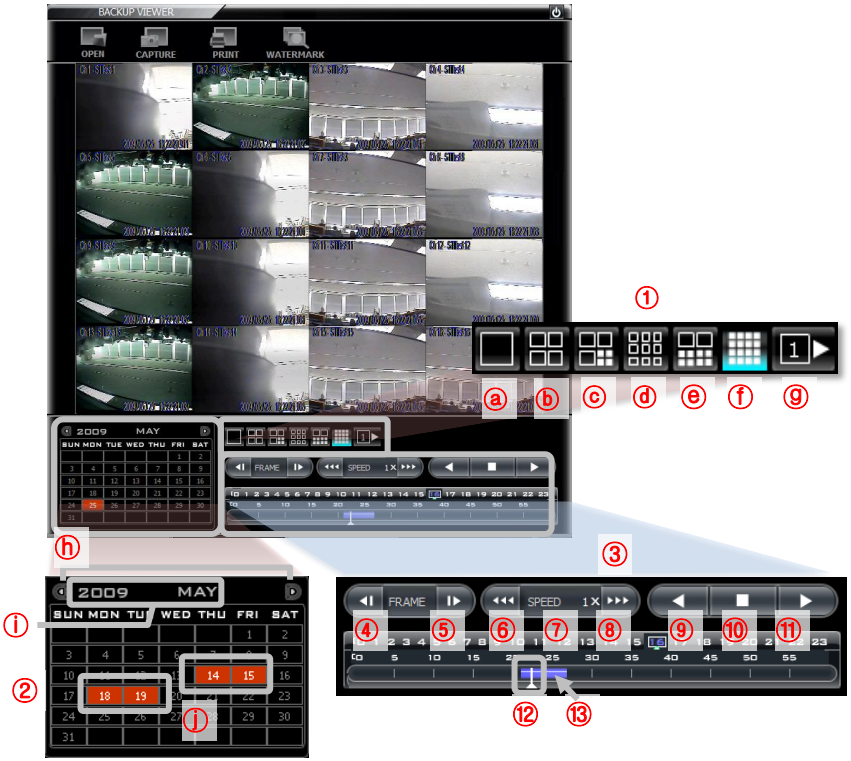
② Display Area: The selected channel is played in this area.

ⓔ Channel information

ⓕ The date and time of the recorded video

③ Power Button

Playback Control Panel



[Screen 6- 4] Calendar & Control Panel

① Display Control Panel

- ⓐ 1-channel split mode
- ⓑ 4-channel split mode
- ⓒ 7-channel split mode
- ⓓ 9-channel split mode
- ⓔ 10-channel split mode
- ⓕ 16-channel split mode
- ⓖ Keep current split mode and switch to next available channels

② Calendar Panel: This panel is used to search for the video at a particular time for the selected channel.

ⓗ Calendar panel

ⓘ Recorded date and time of playback video.

ⓙ Dates with recorded data are highlighted.

③ Playback Control Panel

④ Move 1 frame backward (It works at playback mode only.)

⑤ Move 1 frame forward (It works at playback mode only.)

⑥ Reduce Playback speed

⑦ Display current Playback speed

⑧ Increase Playback speed

⑨ Reverse Playback

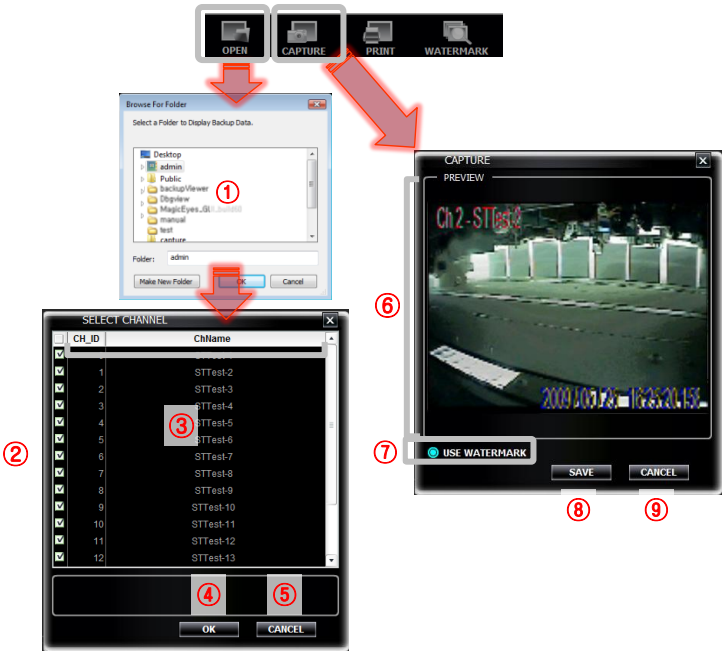
⑩ Stop Playback

⑪ Forward Playback

⑫ Current playback location

⑬ Backup Data time bar

Select Channel Window and Capture Window



[Screen 6- 5] Open & Capture Windows

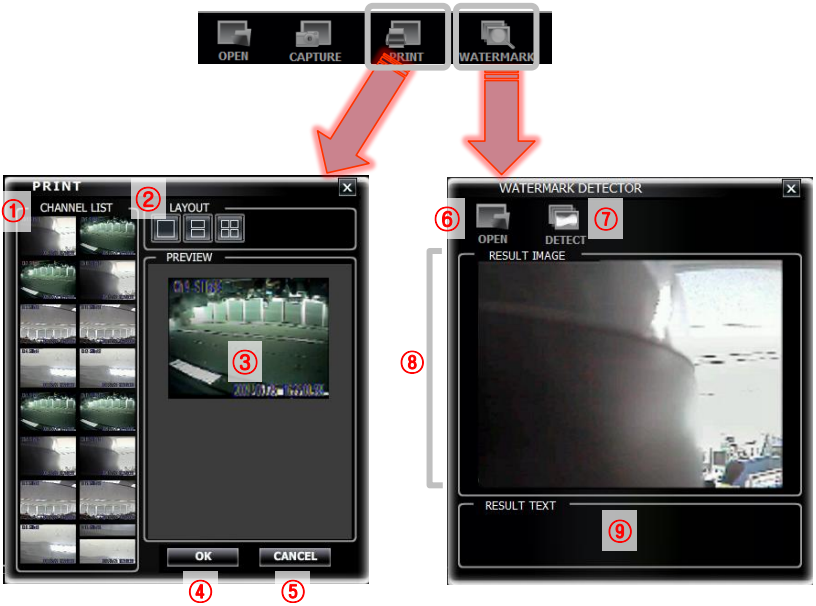
Select Channel Window

① Select Folder
② Select the channels to play back
③ Displays the ID and name of the channel
④ OK: Click to play back the selected channels
⑤ Cancel: Click to close the window without selecting a channel to play back.

Capture Window: In this window, the current screen of the playback video can be captured and saved as an image file.

⑥ Preview area for the screen to be captured.
⑦ Select/ De-select whether to use the watermark function.
⑧ Save: Save the selected screen as an image file(BMP or JPEG)
⑨ Cancel: Close the windows without saving.

Print Window and Watermark Detector Window



[Screen 6- 6] Print &Watermark Windows

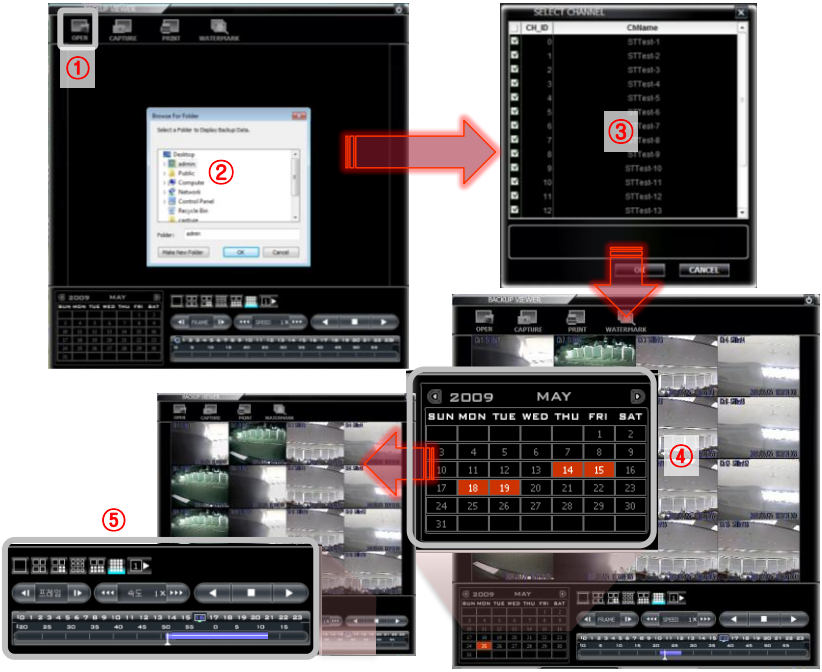
Print Window: Window for Printing the Current Screen of the Playback Window

① Channel List: List for selecting the channels to print
② Layout: Select the layout for printing
③ Preview: The images can arranged on the selected layout, and a preview of the page is displayed.
④ Print: Click to print with the selected settings.
⑤ Cancel: Click to close window without printing.

Watermark Detector: Open an image file that was saved with watermark function enabled, and check to see if the image has been modified.

⑥ Open: Open an image file
⑦ Detect: Check to see if the image file was modified.
⑧ Result Image: Shows the preview of the image file and the result of the watermark detection.
⑨ Result Text: Shows the result of the watermark detection

Open

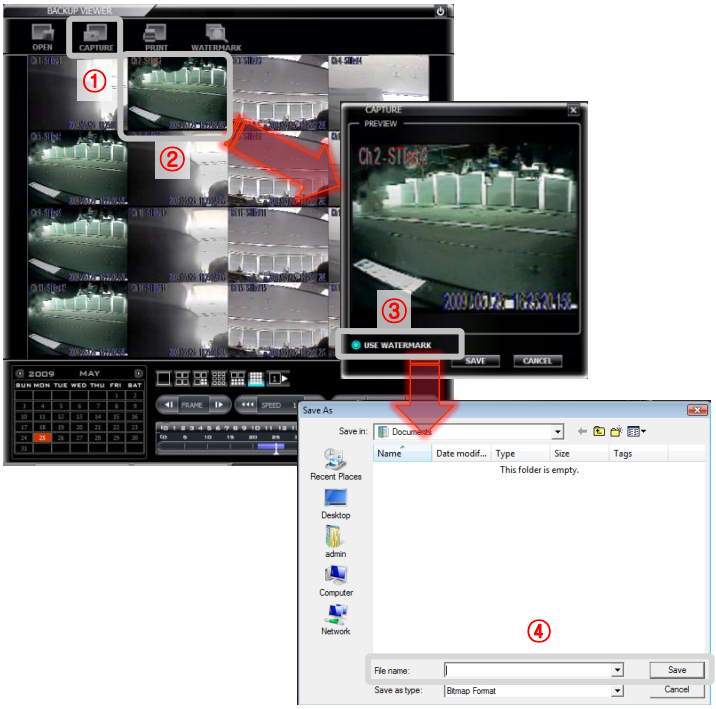


[Screen 6- 7] Open Scenario

[How to Open]
Viewing a backup video with the Backup Viewer is briefly explained here.

① Click Open button in the Backup Viewer
② Select the directory where the IVA backup files are stored.
③ Select the channels to view from the channel list.
④ Select a date with recorded data from the calendar panel.
⑤ Change Split mode and control video

Capture



[Screen 6- 8] Capture Scenario

[How to Capture]
After playback of the backup video, capture and save the screen.

① Click on a channel to select it. (The name of the selected channel will be changed to red)
② Click Capture menu button.
③ Enable or disable watermark function and click on 'Save' button.
④ Select a directory to save to, enter the filed name, and save. (Captured image format: JPEG or BMP / Size: 720 x 540)

Print

[Screen 6- 9] Print Scenario

[How to Print]

① Click Print button

② Select a layout for printing

③ Drag-and-drop an image from the channel list to the preview area to add. Drag-and-drop and image from the preview area to the channel list to remove.

④ Click Print button to print.

Watermark

[Screen 6- 10] Watermark Scenario

[How to Use Watermark]

① Click Watermark menu button
② Click Open button to open an image to check watermark masking.
③ Click Detect button to check whether the image has been modified.
④ The result when the image was not modified.
⑤ The result when the image was modified

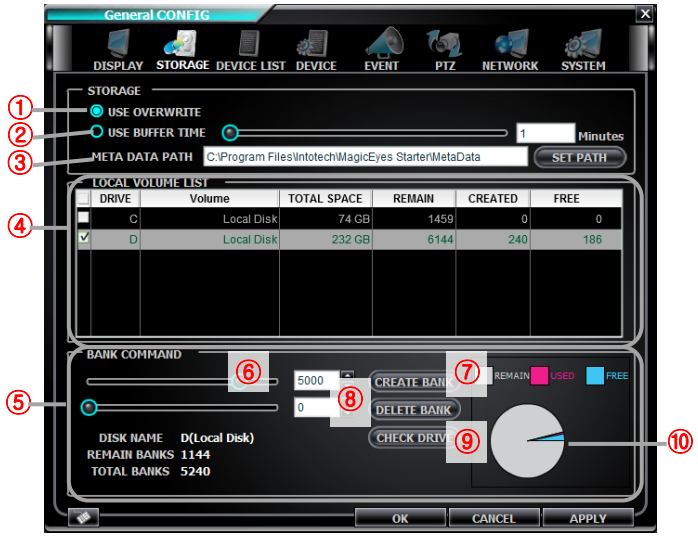
Appendix1 STANET

Appendix1 STANET

STANET

STANET is a client program that connects to a remote DVR by network to carry out the following functions: monitoring, recording, playback, back up, and configuration. Use STANET to easily access security/surveillance service from a remote location.

1. Storage Space Setup



※ Important The client program requires selecting the storage space before running the program. It MUST be designated a storage and once the storage is created, data will only be recorded on that storage space.

① Overwrite: When the space is full in created banks, the client program will overwrite the banks in order of oldest banks first.

※ If "Overwrite" is not selected, the client program does not overwrite when the banks are full

② Use Buffer Time: Use this function to have the client program save the recorded data to a file after a certain time, even if the recorded data size does not exceed 1 Mbyte. Set whether to use this function, and the buffer time.

③ Meta Data Path: Select a local folder for storing the Meta Data when recording (Default Location recommended)

※ Meta data(Meta Information): Additional information about the recorded data. It contains links between the recorded events and video, and the actual storage files.

④ Local Volume List: Select the local repositories for recording. Multiple Repositories can be set.
- Space(Total space): Total space of HDD
- Remain(Remaining space): Number of storage space(bank) that can be created in the remaining HDD space.
- Created: Number of created storage spaces(banks)
- Unused: Number of storage spaces(banks) that have not been used yet.

⑤ Bank Command: Controllers for Creating/ Changing/ Deleting each selected repositories

⑥ Bank Count: Set the number of Filebanks to be used as recording repository

⑦ Create Bank: Creating Recording Repositories

⑧ Delete Bank: Deleting Recording Repositories

⑨ Select Bank: Selecting Recording Repositories
- Bank number: created bank number
- Default number of bank is "0"
- Create Bank: Create recording space
- If the bank is full , system will overwrite the created bank or stop recording
- Delete Bank: Delete recording space
- Select Bank: Select the local drive with banks created

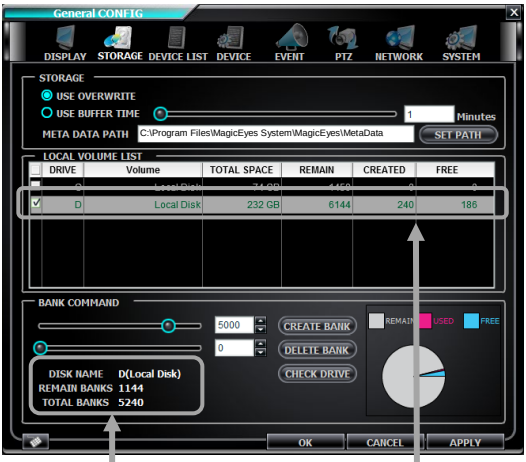
※ What Bank Is…

A bank is a storage space for recording in the client program. One bank consists of 32MB of disk space. Data is recorded only in the banks created by the user.

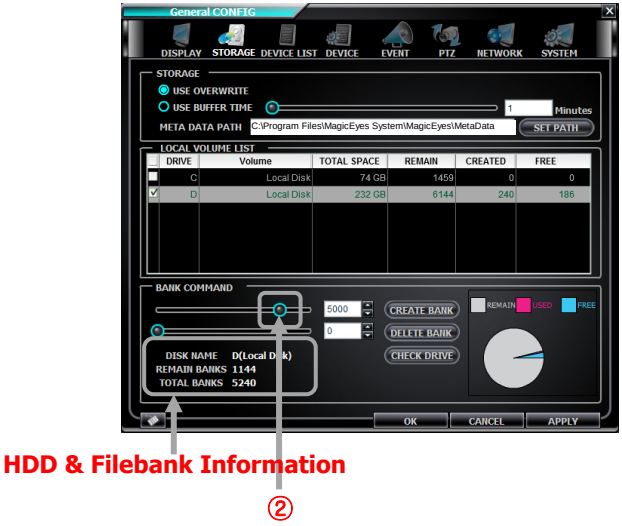
⑩ Storage Graph: Displays the status of the selected storage with a pie-graph.

2. Creating Recording Repositories

① Select a HDD Drive for creating recording repositories.

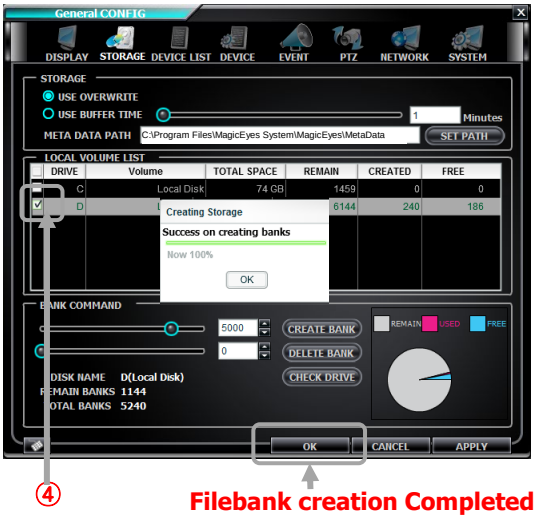


② Set the number of banks to create.



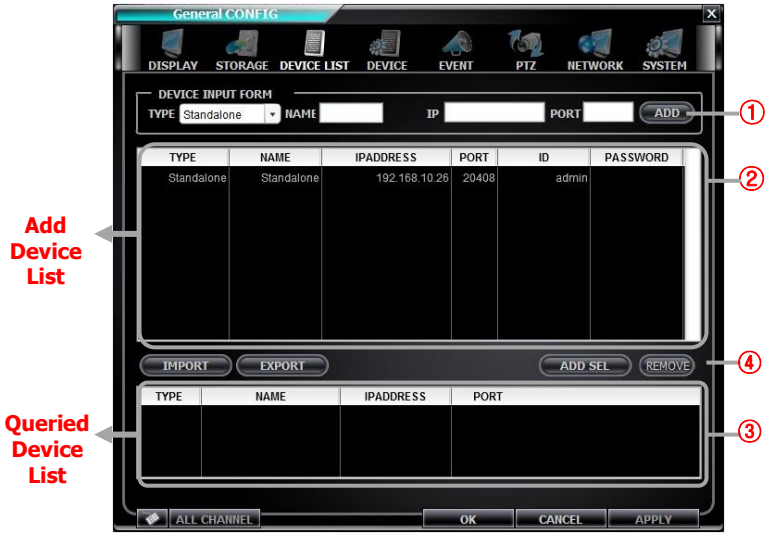
③ Create banks by clicking "CREATE BANK" button.

④ Select a Local Drive in which Filebanks were created.



3. Device List Configuration

Device Input Table: A grid configuration table to configure added devices



① Add: Add a device with the information entered in the Input Form.

② Added Device List

- Type: Select Device Type
- Name: Input device name
- IP: Input network IP address for device

※ Port: Input network port for device (20408)

③ Queried Device list

④ Device add/remove button

- Import: Import by selecting an XML configuration file exported from another client programs.
- Export: Export all configuration setting values to an XML-typed file
- Add Sel: Click to add selected device. All available devices are queried by network and displayed the below grid table in figure ②
- Remove: Remove selected device from the device input grid table in figure ①

Appendix1 STANET Technical Description

STANET Technical Description

This chapter explains the contents of STANET Technical Description

1. Main Screen Structure

Channel is registered in the order of devices registered on the Device List.

※ Main GUI features may be different for each client program packages.

2. Device List

It displays the list of currently registered devices in the client program.

① Select 'Server List' Tab

② The upper-most item in the device list

③ Server: Displays the name and IP address of a registered server

④ Camera: A camera belongs to a server.
- ⓐ Panel number
- ⓑ Name of the currently displayed video channel
- ⓒ Camera number

⑤ The item selected from the device list by the user is highlighted.

3. Playback Control Panel

Search & Playback Control Panel

① Playback Mode Button: Select Playback mode between Local & Remote

② Calendar: Select a day for playback

③ Event Filter Button: Select an Event Filter

ALL ALL Recording Motion Detection

Sensor Schedule Reserved (Other Defined Events)

④ Playback Command Button: Select Playback Control commands

Playback Command Buttons			
	Move to previous frame		Move to next frame
	Rev Playback with Speed Control		Playback with Speed Control
	Playback Backward		Stop (To Live Mode)
	Pause		Play

⑤ Time Bar : Select an Hour(0~23)/ Minute for Playback(0~55)

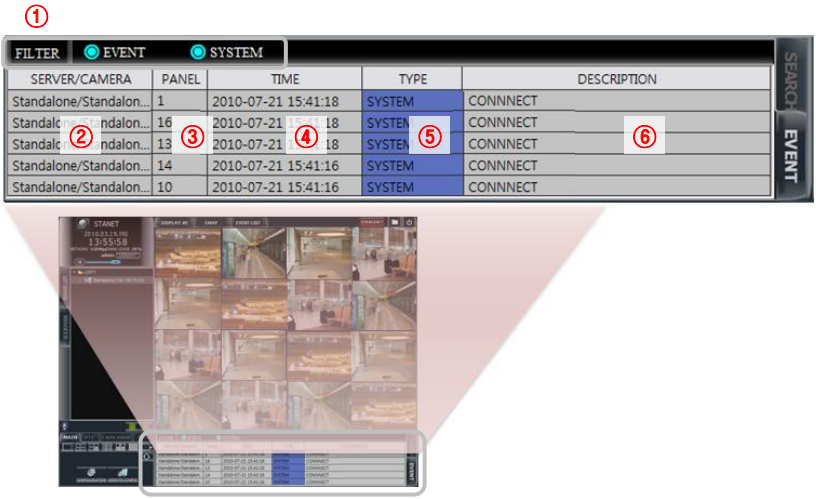
ⓐ Current playback point

ⓑ Region where recorded video data exists

⑥ Date/Time View Area : View Playback Data/Time

⑦ A tab to switch between calendar search panel and event search panel of the recorded data.

4. Event List Panel



① Filter: Select event type for real-time display.

② Server/ Camera: Camera and server name of the event that has occurred

③ Panel: Panel number of the event that has occurred

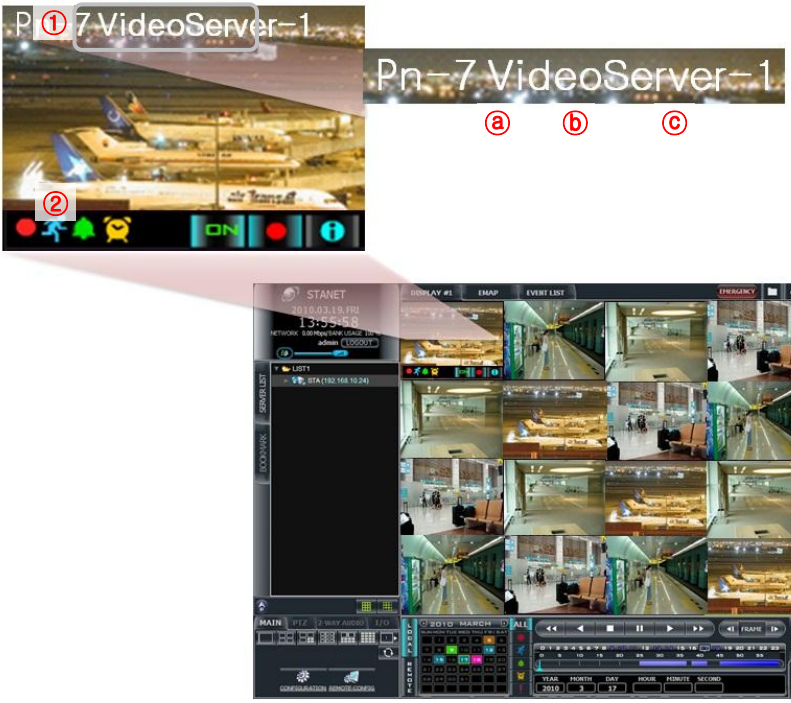
④ Time: Time when the event occurred

⑤ Type: Type of the event that has occurred

⑥ Description: Additional information about the event that has occurred

5. Display

Region for Displaying Surveillance or Playback Video



① On the top-left corner, the panel number is displayed. When a camera is added to the panel, the camera name is displayed there. In the middle, the current status of the panel is displayed
   - ⓐ Panel number
   - ⓑ Surveillance/playback name
   - ⓒ Camera number → (Refer to 'Device list')

② Additional information and status indicators. (Explained in detail in the following page)

6. Floating Bar

Floating Bar with indicators and command buttons.

① Indicator for Continuous Recording
② Indicator for MD Recording
③ Indicator for Sensor Recording
④ Indicator for Schedule Recording
⑤ Indicator for *Digital Output
- When digital output is triggered by motion detection, or sensor, etc, the state(on/off) of digital output is shown by this indicator.

⑥ Command button for connecting servers [On/Off]
⑦ Command button for *continuous recording [On/Off]
- Press this button to start or stop continuous recording. The blinking red icon will indicate that the channel is being recorded. If there is no blinking icon, it means that the channel is not being recorded.

⑧ Command button for displaying the device information

7. Surveillance

Display streaming video along with audio if it is available.

A. Assigning Channels for Surveillance

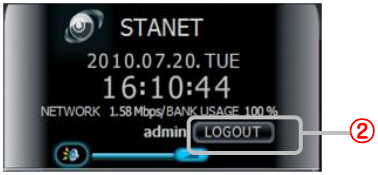
Channel Assignment and Swap

① Channel Assignment : Drag and drop a channel from the [Server List] tab to a panel for surveillance

② Swap Channels : Drag and drop an assigned channel to another channel

B. Login Process

Default Administrator Account



※ Default account Info
ID: admin
Password: admin

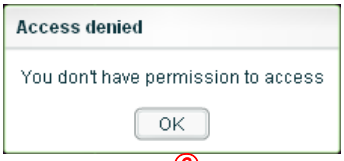
① Login: Click to open login window
② Logout: Click to logout the current account

③

④

⑤

③ Login window
④ Login Fail 1(Wrong password error)
⑤ Login Fail 2 (Unregistered ID error)



⑥

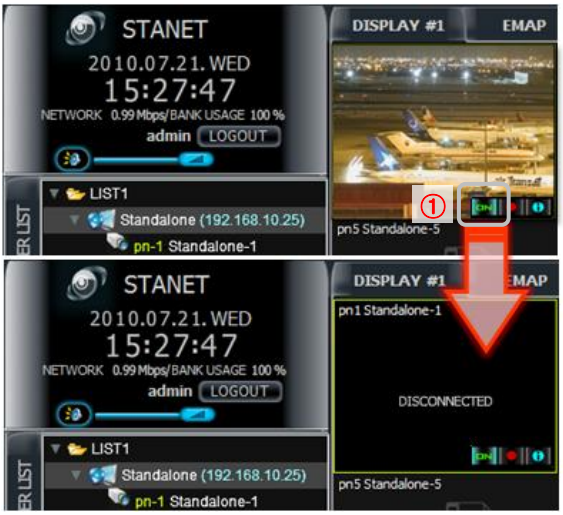
⑥ Access Denied: This error occurs when the user is not logged-in or tries a function that the user does not have access to

※ Resolution: Login again with a right login account or login in with an account which has each relevant access right to use a command.

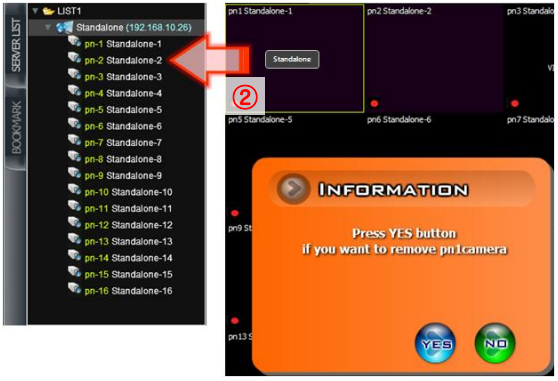
※ Auto Login: Configuration>System>Account menu provides Automatic Login function which enables the client program can run without login steps with the previous login status.

C. Disconnecting / Removing Assigned Channels

Disconnecting / Removing assigned channels on the Video Display Area.



① Disconnect a video channel Server by clicking the Server Connection On/Off command button



② Remove a video channel with 'Delete Key' or drag and drop a channel to the [Server List] while the target channel is selected

D. Connection Fail

①

②

③

④

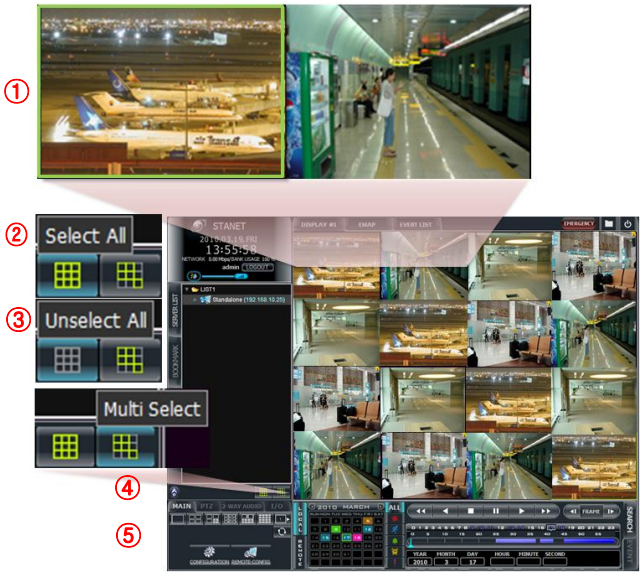
① "Connection Fail" : The message is shown when server connection fails.
- Please check the network connection status

② "Video Loss" : The message is shown when the channel is in video loss state
- Please check video cable connection attached to the server
- Please check network connection status

③ Login Fail : The message is shown when the login account information is incorrect
- Please check the ID and password configured at the "Device List" menu

④ Concurrent Connection Over : The message is shown when the maximum number of concurrent connection is over
- Please check the connection number (available maximum 3 concurrent connection)

E. Surveillance Display Selection



① Selected : When selecting a video surveillance channel, the border of the channel changes to be green.

② Select All : Select All video channels in the video surveillance area.

③ Deselect All : Deselect all selected channels by clicking "Select All/Deselect All" button or by clicking an un-assigned video channel.

④ Multi Select : Select multiple video channels by enabling "Multi Select" button or by selecting video channels with pressing CTRL Key.

⑤ Controlling selected channels : The Playback function is available to selected video channels. The functions like PTZ control, two-way audio are available only to one selected channel.

8. Event List/ Realtime Event View

Real-time monitoring of events that are occurring is possible by selecting the type of events to see.

Pop-up view of the channel is displayed when an event occurs.

① Select type

- Event: Select which events to display in real-time event list window
- System: Select which system-related events to display in real-time event list window

※ Even if an event type is not selected for being displayed in the real-time event list window, it will still be recorded in the database.

② Real-time event list: Double-click on an event for a pop-up display of the corresponding channel.

9. Event List/ Search Event View

Search for events that occurred by event-type, date, time, and text.

Play-back the moment of the event.

① Select Type

- Event: Select which events to search for.
- System: Select which system-related events to search for.

※ Even if an event type is not selected for being displayed in the real-time event list window, it will still be recorded in the database.

② Date/Time search: Select date or time of the event to search for.

③ Text search: Search for events that include certain texts of server or camera name.

④ Search event list: Double-click on an event to play back the video of the moment of the event.

10. Record

A. Continuous Recording (On / Off)

① Start Recording: Click Record button to turn on Continuous Recording for the selected panel

ⓐ Recording-ON Indicator will start blinking

② Stop Recording: Click Record button again to stop recording

ⓑ Recording-ON Indicator will stop blinking

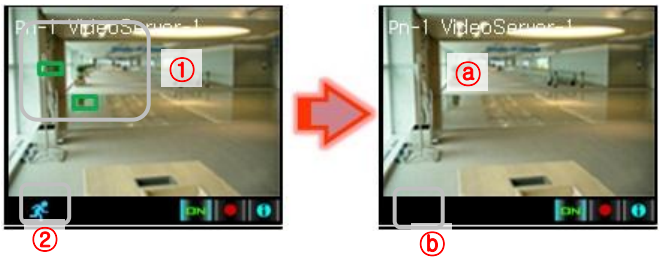
※ Continuous recording has the top priority: If continuous recording button is pressed while MD(motion detection) recording is in progress, it will be converted to continuous recording.

B. MD(Motion Detection) Recording

Recording when MD events occur.

MD Recording mode is activated after configuring MD Enable/Disable setting and MD area for each device in Configuration Window.

※ Movement detection settings can be changed in the Event Menu in Configuration.



① Green Rectangles for MD Event area

② MD Recording Indicator

ⓐ, ⓑ MD Recording is off

C. Emergency Recording Command Button

A Command Button for Emergency Recording

① When there exist any recording channels : Click to stop recording for all channels.

② When there exist no recording channels : Click to start recording for all channels.

11. Playback

For playback of the recorded video, a video channel should be assigned to a video display panel and its panel should be selected with mouse click. And then playback command can be done.

※ Clicking the playback button on the "Search Tab" without selecting a channel will start All Channel Playback. Playback cannot be done when a channel is not assigned to any panel.

A. Playback Mode

B. Search Filter Button

Select a Search Filter Button to choose an event type to search for, and filter out all other event types.

All

Continuous

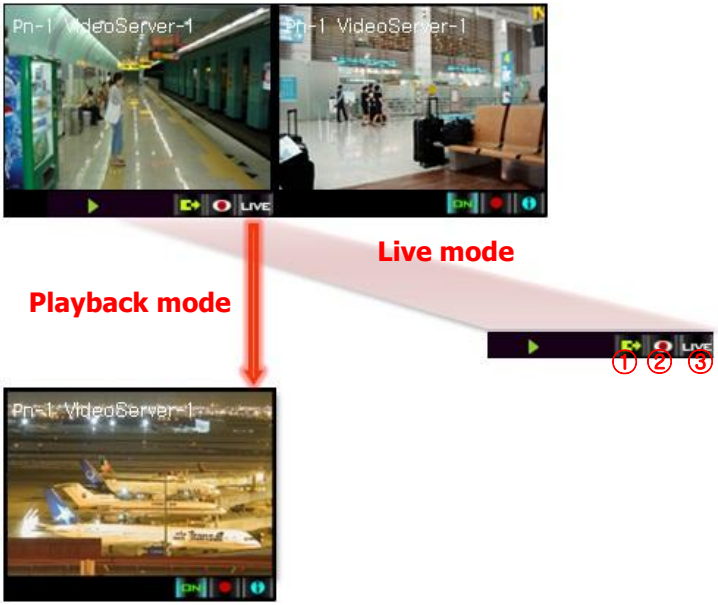
Motion Detection

Sensor

Schedule

Reserved.

C. Playback mode Indicator



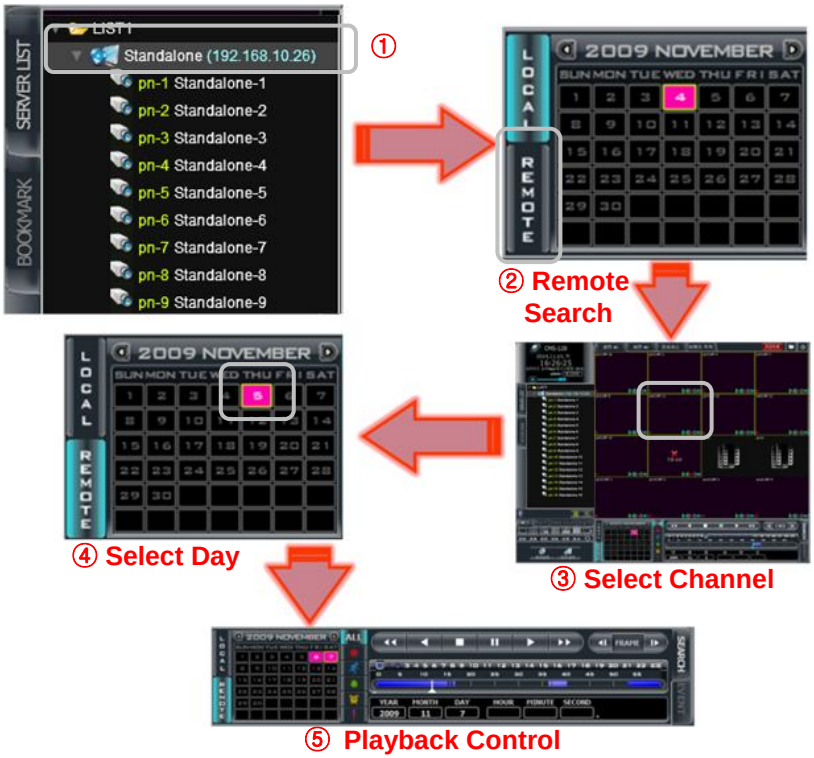
① Run Backup Manager of the current channel

② Reserved

③ Switch to live surveillance mode

- Press LIVE button to convert to LIVE mode during playback.
- When the mouse pointer is on the display area of a Channel, the playback status bar will slide up from the bottom of the display area. area

12. Remote Search



A. To execute Remote Search

① Select the server to that needs to be remote searched.

② Click on REMOTE button in the Playback Control Panel.

③ Select the channel to playback

④ Select a Day to playback

⑤ Use the playback button to start Remote Search.

※ After connecting to Remote Search, all functions work the same as Local Search functions.

B. To end Remote Search

Click on LOCAL button to return to normal search mode.

NeoDHS Service

Appendix2 NeoDHS

DDNS Service Support
This product supports DDNS service.

1. NeoDHS Service Overview

NeoDHS is a service to maintain network connectivity in DDNS networking environment. In the dynamic IP environment of the internet, there are frequent changes in the server's IP address. NeoDHS is a service that detects the changes in the IP address and stores the latest IP address. Use NeoDHS to easily connect to the server from a remote location.

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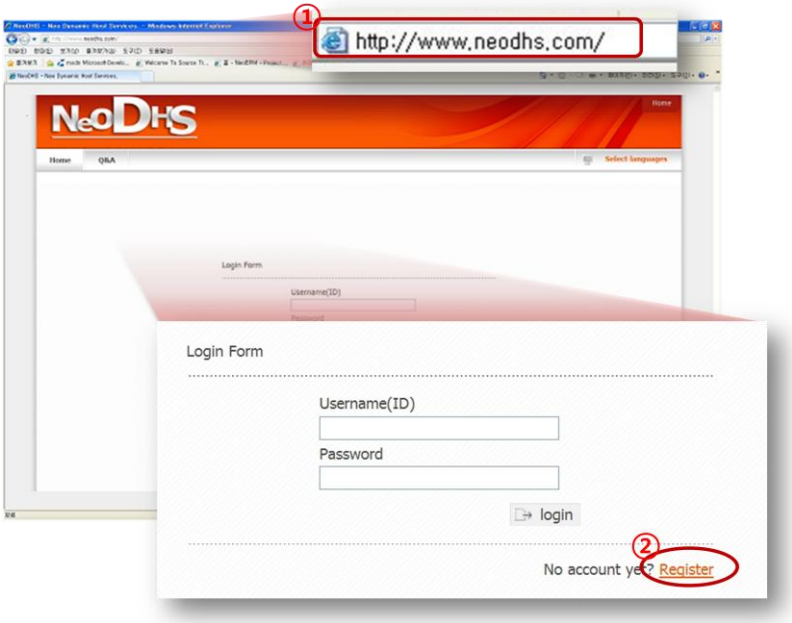
2. Signing In and Using NeoDHS

※ The process may vary slightly according to different products.

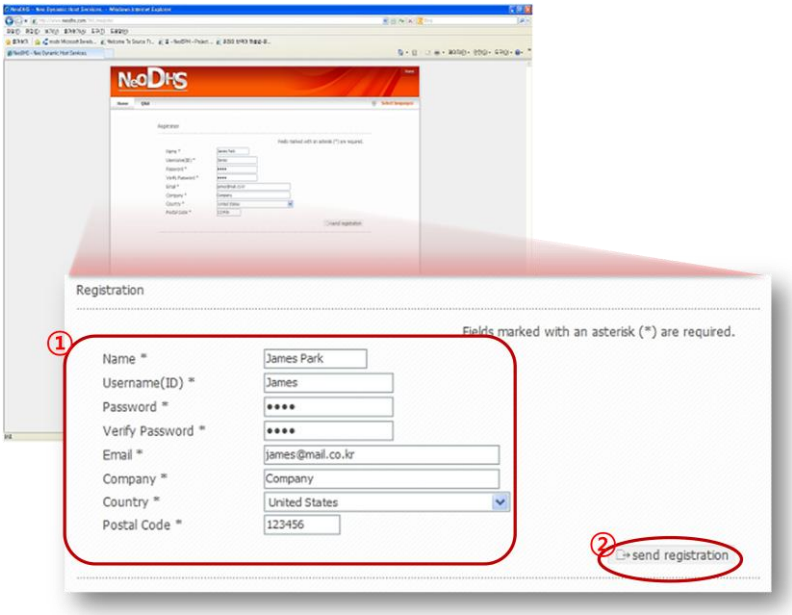
Connecting to NeoDHS



① To sign in and use NeoDHS service, connect to 'http://www.neodhs.com' by entering the URL in the address bar.

② Login window will pop up when connected. To sign in, click the [Register] button on the bottom of the login window.

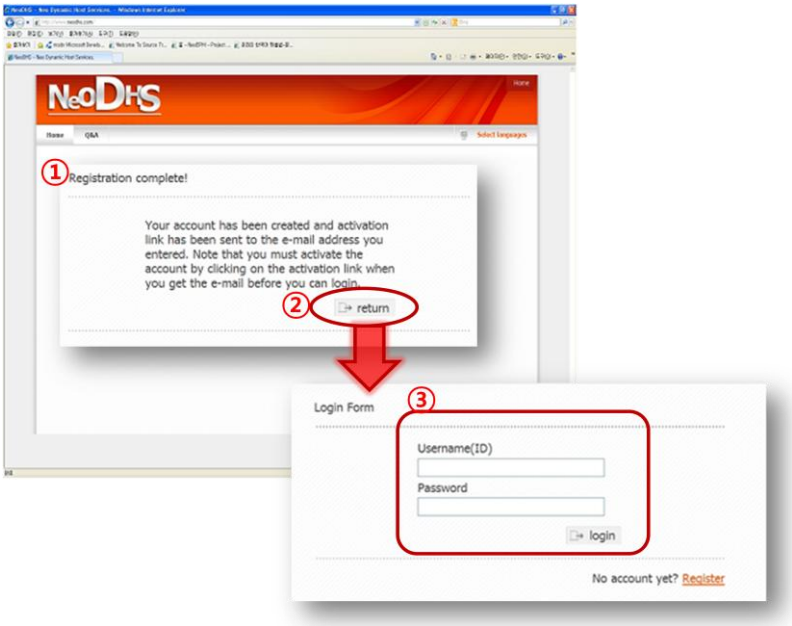
Account Information



① Input user information: Name, Username (ID), Password, Verify Password, E-mail, Company (company name), Country (country name), and Postal Code (zip code).

② Finish account registration by clicking on [send registration] button.

Login

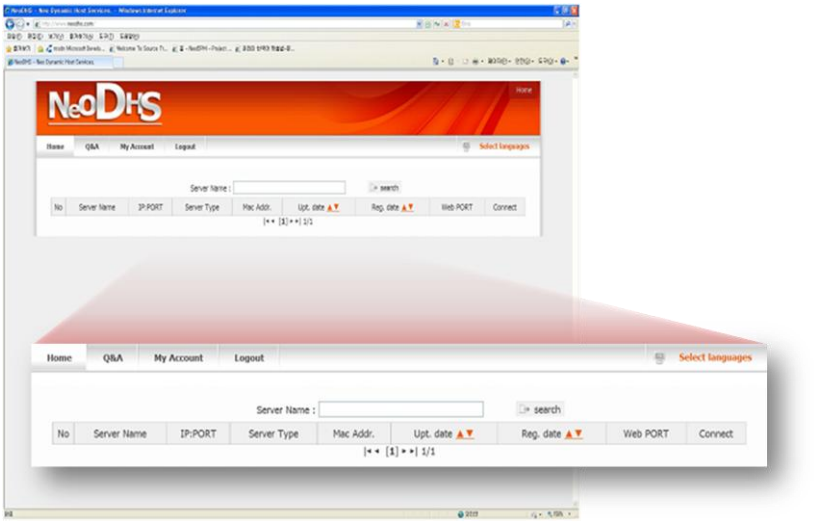


① If an account has been successfully generated, the user will be notified by the “Registration complete!” message.

② Click [return] button to return to NeoDHS home.

③ Login by entering the, ID and password of the registered account.

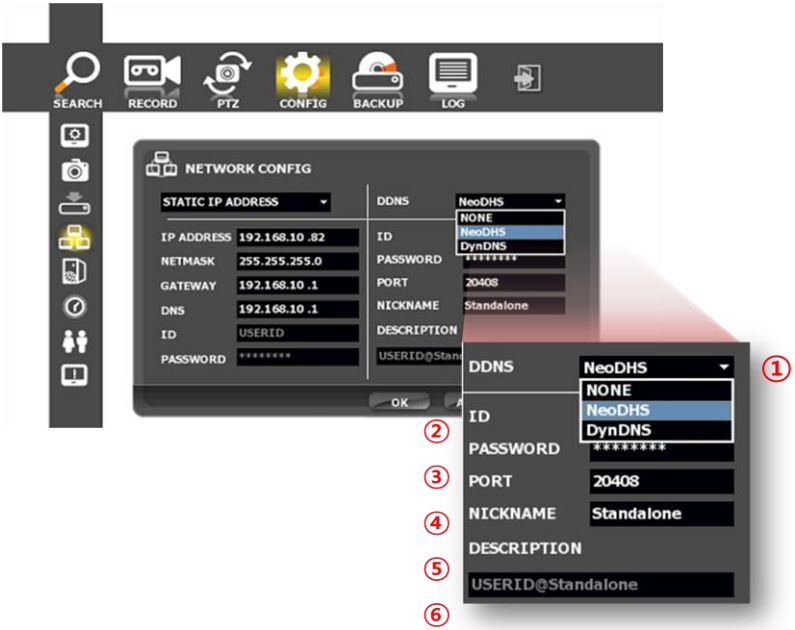
Initial Login Screen



① The screenshot above is the screen displayed when user has initially logged in. If any server has been registered, it will be displayed in the above screen.

※ Multiple servers can be registered to a single ID.

3. Server Registration



To use Neo DHS service, user must enter the required information in the Network Configuration of DVR. (Refer to 5.4.4 Network Setup).

① DDNS: Select “NeoDHS” in this field.

② ID: Input the ID that will be used for NeoDHS service.
(Input the same ID that was entered in Appendix 1.2.2)

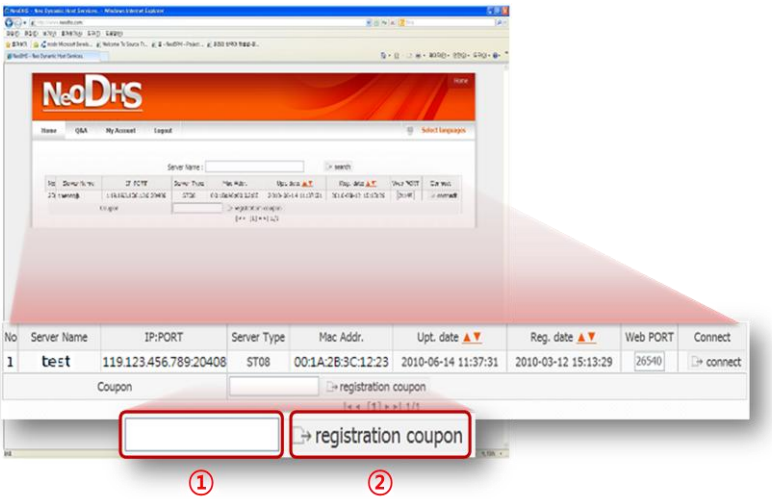
③ Password: Input the password that will be used to for NeoDHS service.
(Input the same password that was entered in Appendix 1.2.2)

④ Port: Default value is ‘20408’.

⑤ NickName: Input a nickname (alias) that the user wishes to use.

⑥ Description: This field will automatically change according to the information entered above.

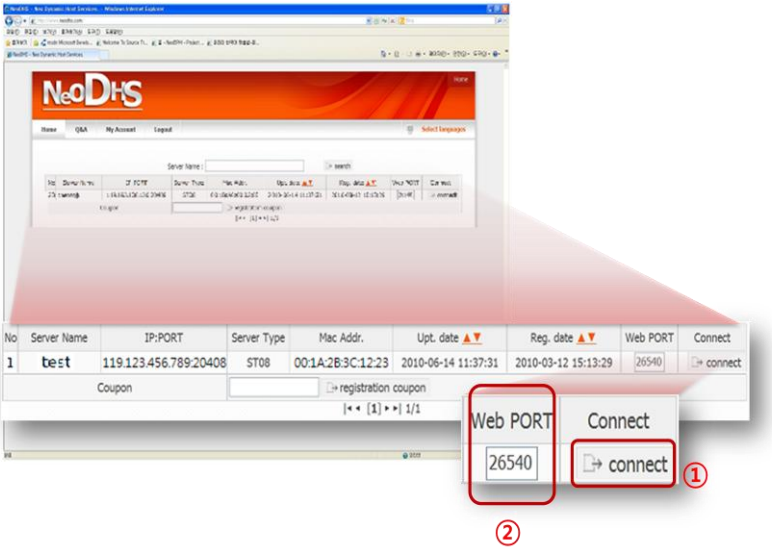
Coupon Registration



① Input the authorization number of the coupon that you received

② Click [registration coupon] button to register the server.

4. Executing WebClient Program



① Click [connect] button on a server's [Connect] tab to run the server's WebClient

② [Web port]
The default setting for the Web Port is 26540.
In case of using a router, a different Web Port number may be needed. The user can change the Web Port number by entering a different number and clicking [connect] button

※ Port Number is automatically saved.

Product Warranty

This product has passed thorough quality management and inspection, and the supplier warrants properly according to this warranty.
[Warranty Notice]
The supplier executes product warranty as below. Place of purchase appointed at our headquarters or technical support team from our headquarters provides service when request of service.

Product Name		Model Name	
Serial Number		Place of Purchase	
Date of Purchase		Name of Customer	
Customer Address			

[Warranty by Free of Charge]
The supplier provides 1 year warranty as below condition from date of purchase for product part or technical defect occurred under normal use and condition.
However, if the date of purchase cannot be confirmed or when loss of this product warranty, warranty period will be decided by the product serial number which contains manufacturing date information managed during product manufacturing for 1 year as below condition?
- Warranty condition in case of breakdown caused by product's performance and functional defect under normal use

Customer Damage Type	Warranty conduct according to warranty period	
	Within warranty period	After warranty period
Critical defect within 10 days from date of purchase	Product exchange by free of charge	No relevant fact
Breakdown caused by same defect up to 3 times	Product repair by free of charge	Charged product repair
Breakdown caused by same defect up to 4 times	Product repair by free of charge	Charged product repair
When manufacturer have lost the product requested for repair by customer	Product repair by free of charge	Refund after depreciation for required amount
When repair is impossible even though there is product part available for repair	Product repair by free of charge	Refund after depreciation for required amount

- Breakdown caused by customer's intention and fault within warranty period

Breakdown Type	Warranty conduct according to warranty period	
	Within warranty period	After warranty period

When repair is impossible	Customer charge	Customer charge
Breakdown caused by same defect up to 3 times	Charged product 0repair	Charged product repair

[Charged Product Warranty]

- The following cases are handled by charged service even within the warranty period by free of charge.
- Product breakdown occurring after warranty period
- Breakdown due to customer's careless usage or voluntarily repairing, rebuilding the product
- Breakdown due to natural disasters(Fire, Injury from Salt/Flood damage)
- Belongings provided when purchase of product
- Breakdown from not obeying the specified method of use and notice.
- Breakdown from not using the specified electricity volume(Voltage, Frequency)
- Breakdown caused by other service personnel than the supplier agent or technical service team personnel
- Product breakdown or defect from having the product to drop after installation.
- When request of installation for move of product
- Re-installation after installing once by customer's request on purchase
- Re-installation due to customer's inexperienced installation
- Requesting service due to reasons rather than product breakdown

[Policy for product repair]

Customer must connect to the supplier and receive a RMA (Returned Merchandize Authorization) number by using the product serial number when need of product repair. (When computerization is not available: Customer must receive the RMA number from the supplier's Sales Team when need of product repair. Given RMA number is valid for 30 days from date of receipt and automatically cancelled afterward.
In case of returning for product repair, RMA number must be presented. When RMA number is not available, service will be refused and the received product will be returned without conduct of repair. Customer must use our company's packing box provided on purchase for product protection purpose, and must safely pack otherwise to prevent any external impact or condition when loss of packing box. Customer must bear the freight charge when dispatch and the product must arrive within 30 days from the date of receipt of RMA number to have the warranty right of product recognized.
If the product arrives at our Technical Service Center after 30 days from the date of receipt of RMA number, the product will be returned as it is and the freight charge will also be charged to customer.
If the product's packing condition is not appropriate for product repair, the product will be returned as it is and the freight charge will also be charged to customer. RMA number and this product warranty must be enclosed within the product when dispatching product for repair, and both document must be available to be recognized for product warranty right. If there are any insufficient parts in the two documents, the product will be returned as it is and the freight charge will also be charged to customer.
The supplier shall provide perfect repair and quickly dispatch as soon as possible when the customer satisfies normal quality warranty condition. The supplier will bear the freight charge when returning. However the repair cost is charged by the standards shown at table 2 and table 3.
For more detailed information, please contact the supplier.

Thank You